PROVISIONS FOR INDIVIDUAL DIRFERENCES MARKING AND PROMOTION

BULLETIN, 1932, No. 17

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UNITED STATES DEPARTMENT OF THE INTERIOR HAROLD L. ICKES - SECRETARY

OFFICE OF EDUCATION: WILLIAM JOHN COOPER
COMMISSIONER

PROVISIONS FOR INDIVIDUAL DIFFERENCES MARKING, AND PROMOTION

BY ROY O. BILLETT

BULLETIN, 1932, NO. 17

NATIONAL SURVEY OF SECONDARY EDUCATION

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NOTE

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421528 JUL I 1 1935 CONTENTS LETTER OF TRANSMITTAL . THE SCOPE: A PRELIMINARY VIEW . . 1. Taking stock of practice . . . 2. Secondary education in a democracy . . . 3. Techniques and a preliminary view of the data 4. Subject matter of Parts I, II, III, and IV . . . PART I. HOMOGENEOUS GROUPING AND SPECIAL CLASSES CHAPTER I: A REVIEW OF THE LITERATURE. 16 1. Four axioms 16 2. An analytical survey of the literature from 1910 to 1928. 17 3. Analysis of the literature since 1928 20 4. Controlled studies of grouping . . . 27 5. Summary of the Ohio and Detroit experiments . 33 6. Contribution of the present survey . CHAPTER II: AN OVERVIEW OF HOMOGENEOUS GROUPING 40 1. Geographical considerations . . 40 2. Relation of grouping to size of school . . . 42 3. Relation of grouping to type of organization. 45 4. Other provisions for individual differences . 50 5. Selecting a small group of schools for detailed and intensive study 52 6. Schools returning the follow-up form . 53 7. Returns on an earlier inquiry . . 58 8. Summary 59 CHAPTER III: EXTENT OF HOMOGENEOUS GROUP-ING IN HIGHLY SELECTED SCHOOLS . 60 1. Preliminary questions and considerations . 60 2. Total offerings and extent of grouping . . . 61 3. Relation of total enrollment to extent of grouping . 70 4. Grade enrollment and extent of grouping . . . 79 5. Relation of type of organization to extent of grouping . 86 6. Summary . CHAPTER IV : BASES OF GROUPING. 95 1. The grouping criterion in theory and practice . 95 2. Selection of bases for study [111]

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LETTER OF TRANSMITTAL

DEPARTMENT OF THE INTERIOR,
OFFICE OF EDUCATION,
Washington, D. C., March, 1933.

Sir: Within a period of 30 years the high-school enrollment has increased from a little over 10 per cent of the population of high-school age to more than 50 per cent of that population. This enrollment is so unusual for a secondary school that it has attracted the attention of Europe, where only 8 to 10 per cent attend secondary schools. Many European educators have said that we are educating too many people. I believe, however, that the people of the United States are now getting a new conception of education. They are coming to look upon education as a preparation for citizenship and for daily life rather than for the money return which comes from it. They are looking upon the high school as a place for their boys and girls to profit at a period when they are not yet acceptable to industry.

In order that we may know where we stand in secondary education, the membership of the North Central Association of Colleges and Secondary Schools four years ago took the lead in urging a study. It seemed to them that it was wise for such a study to be made by the Government of the United States rather than by a private foundation; for if such an agency studied secondary education, it might be accused either rightly or wrongly of a bias toward a special interest. When the members of a committee of this association appeared before the Bureau of the Budget in 1928, they received a very courteous hearing. It was impossible, so the Chief of the Budget Bureau thought, to obtain all the money which the commission felt desirable; with the money which was obtained, \$225,000, to be expended over a 3-year period, it was found impossible to do all the things that the committee had in mind. It was possible, however, to study those things which pertained strictly to secondary education, that is, its organization; its curriculum, including some of the more fundamental subjects, and particularly those subjects on which a comparison could be made between the present and

LETTER OF TRANSMITTAL

earlier periods; its extracurriculum, which is almost entirely new in the past 30 years; the pupil population; and administrative and supervisory problems, personnel, and activities.

The handling of this survey was intrusted to Dr. Leonard V. Koos, of the University of Chicago. With great skill he has, working on a full-time basis during his free quarters from the University of Chicago and part time during other quarters, brought it to a conclusion.

This monograph, prepared by Dr. Roy O. Billett, represents a careful study of what high schools are doing in providing for individual differences of pupils. There were two purposes in its preparation—first, to report accurately what the secondary schools do, and, second, to present an accurate analysis of the provisions that are in use at the present time.

Since 1900 the high-school population has grown tremendously. This is considered good for a democracy. But what has the high school done to overcome the increasing heterogeneity of its pupular Statistically, we know that the school is now holding twice as many pupils in the fourth year of high school as it did in 1912. Thorndike tells us that in 1890, 95 per cent of the secondary pupils were above average in native mentality. In 1918 the investigation showed that but 83 per cent of the pupils then in secondary schools were above average in mentality. By 1930 a very much lower percentage might be expected.

In the present investigation a 1-page inquiry was sent to the complete mailing list of high schools in the Office of Education. Twenty-eight provisions commonly shown in literature to be used by high schools in caring for individual differences of pupils were enumerated. A space was left for reporting any other. To this inquiry more than 11,000 replies were returned, and, after rejection of those which were incomplete, 8,594 remained. Every State in the Union and high schools of every size were represented. More than half of the schools had 250 or fewer pupils; 1,605 schools had 500 or more pupils. More than half of the schools were of the reorganized type. A total of 4,304 schools reported having grades 9-12. Among 8,594 replies selected, 101 principals had filled in the twenty-ninth blank; 45 of these had

LETTER OF TRANSMITTAL

enumerated supervised study; other than this reply, they gave such answers as lip-reading classes and Braille classes. The six provisions regarded by principals as being used most effectively were (1) homogeneous grouping, (2) the Morrison plan, (3) opportunity rooms for gifted pupils, (4) differentiated assignments, (5) the contract plan, and (6) opportunity rooms for slow pupils. All these Doctor Billett showed could be treated under three major headings, namely, homogeneous grouping, special classes, and plans characterized by the unit assignment. The percentages reporting unusual success with the various provisions range from 26 to 18, showing that only one principal in four or five has a considerable degree of confidence in the plan which he reports.

The monograph itself is in four sections. Part 1 has to do with homogeneous grouping and special classes. Part 2 has to do with plans characterized by use of the unit assignment, such as the Morrison plan, the Winnetka plan, the Dalton plan; in this part are discussed some 11 plans enumerated in the outline. Part 3 deals with other provisions and planning a program. Part 4 has to do with marking and promotion.

The manuscript is most comprehensive. It analyzes the existing literature on individual differences and shows what is undoubtedly the current practice in the field; suggestions are made for further development of this practice. Clearly, most of the voluminous literature which has been produced in the last few years on individual differences rests on the shelves of libraries. Either on account of practical difficulties or for other reasons it has not affected practice in the average high school of this country. The manuscript is so noteworthy that I recommend it be published as a monograph in the series of the National Survey on Secondary Education.

Respectfully submitted.

Wa. John Cooper, Commissioner.

The SECRETARY OF THE INTERIOR.

PROVISIONS FOR INDIVIDUAL DIFFERENCES, MARKING, AND PROMOTION

THE SCOPE: A PRELIMINARY VIEW

1. TAKING STOCK OF PRACTICE

A twofold purpose.—Parts I, II, and III of this monograph have a twofold purpose, first, to report accurately what the secondary schools are doing to provide for the individual differences of pupils, and, second, to present a detailed analysis of the provisions which are being made. In this study? the well-established fact that wide differences exist in individual abilities, interests, aims, and needs, is regarded as axiomatic. It seems unnecessary either to explain that this assumption is supported literally by thousands of investigations which have been made during the past two or three decades, or to argue that the time is now at hand when stock should be taken of the practices of secondary schools to discover the actual extent to which the impressive amount of available, valid, and reliable information dealing with individual differences has been accompanied by a modification of earlier traditional classroom procedures.

A related study of marking and promotion.—Part IV of this monograph deals with an intensive study of procedures in marking and promotion. As will be explained later, the study of provisions for individual differences reported in Parts I, II, and III, and the study of marking and promotion reported in Part IV, are closely related through the intrinsic natures of their subject matter and through the methods employed in the two investigations.

2. SECONDARY EDUCATION IN A DEMOCRACY

An increasing obligation to the individual child.—Doctor Koos has said, "Almost all the writers urge the recognition of individual differences in ability, interests, and needs. The

performance of this function becomes an obligation as soon as we make progress toward popularization, since wider diversity among the student body will accompany any significant increase in the proportion of young people of given ages who enroll in the schools." Thus, Koos brings out the important fact that society is in duty bound to provide secondary education suitable to the ability, interests, and needs of each and every pupil who is permitted to enroll in the secondary school.

It is a matter of common knowledge that American secondary education in the past has been highly selective. Even to-day secondary education is being utilized by only onehalf the young people of secondary-school age.2 However, from the earliest days of secondary education down to the present, progressively larger proportions of boys and girls have enrolled in the secondary schools. Society, in the main, has encouraged the trend toward secondary education for all the children of all the people. One by one the social and economic barriers which have withheld certain portions of our population from the advantages of secondary education otherwise available to them have rapidly disintegrated under combined onslaughts from without and from within. accordance with the natural law of normal distribution each new portion of the population which has found its way within the portals of the secondary school has added its quota to the already wide ranges of ability, and to the already diverse interests, aims, and needs for which the secondary school must provide suitable programs and procedures.

Statistical demonstration of increased ranges.—The precise extent to which the ranges of individual differences increase, as greater proportions of our young people enter the secondary schools, is a matter of no great concern here. Such ranges are amenable, of course, to precise statistical demonstration. In the matter of academic intelligence, Thorndike showed that in 1890, when only 1 child in 10 reaching their teens in the United States entered high school, 95 per cent of these pupils were above average in native intellectual capacity, whereas



¹ Koos, Leonard V. The American Secondary School, Boston, Ginn & Co., 1927, p. 157.

² Jessen, Carl A. Major Trends in Secondary Education in the United States. Proceedings Nineteenth Annual Schoolmen's Week. The Press of the University of Pennsylvania Philadelphia, 1932, pp. 421–430.

in 1918, when approximately 1 child in 3 entered the high school, only 83 per cent of them were above average.3 These figures indicate that 40 years ago the secondary-school population was fairly homogeneous in academic intelligence, since nearly all secondary-school pupils were above the average of the total population of their age group in that respect, at least. Parenthetically one may add also that on the whole they were unquestionably above the average in social and economic status. However, in the absence of adequate data one would be rash to compare in other respects the highschool pupils of earlier days with their contemporaries who never entered high school. In special abilities and aptitudes essential to success in such fields as mechanics, industrial arts, household arts, music, or the fine arts, undoubtedly many superior individuals belonged to the latter group. For present purposes detailed comparisons are unnecessary.

Homogeneity gradually replaced by heterogeneity.—The essential and obvious truth is that the secondary-school population of 40 years ago, fairly homogeneous in abilities, interests, aims, and needs, has been replaced with a present student body highly heterogeneous in every respect, and that the change has crept upon the secondary schools so gradually as to take them almost unawares. The succeeding years down to the immediate present have brought a progressive increase, not only in the total number of pupils enrolled, which would be expected as a result of the country's increase in population, but, what is more significant, they have produced a progressive increase in the proportion of the total population of secondary-school age which has entered and has remained in high school. A nation committed to the perpetuation of a democratic social order has cause for great rejoicing in this fact. But the new conditions may lead to social disaster if the secondary school is not modified to make the period of secondary education worth while for the pupils who are permitted to euroll.

Increased secondary-school enrollments, 1912-1930.—The following data will serve to illustrate the trend in the past two decades toward universal secondary education. From 1912 to

³ Thorndike, Edward L. Changes in the Quality of Pupils Entering High School, School Review, 30: 355-356, May, 1921.

1930 the enrollment of pupils in the first year of high school 4 increased 3.2 times. (Fig. 1.) During the same interval the second-year enrollment increased 4 times; the third-year enrollment, 4.5 times; and the fourth-year enrollment, 3.5 times. By way of contrast, the seventh-grade enrollment during the same period increased only 1.5 times. Since compulsory education laws have required rather uniformly the attendance of seventh-grade pupils throughout the years 1912 to 1930, the seventh-grade enrollments may be regarded at least as rough indexes of the progressive increase which has taken place in the total population of secondary-school age. Therefore, the following percentages are highly significant. In 1912 the firstyear high-school enrollment was only 38 per cent of the seventhgrade enrollment; but in 1930 the corresponding percentage was 80. In other words, during 1912 to 1930 the holding power of the secondary school, from the seventh grade to the first year of high school, had more than doubled. In 1912 the enrollment in the second year of high school was 23 per cent of the seventh-grade enrollment, as compared with 55 per cent in 1930. Corresponding percentages for the third year of high school are 15 and 45; for the fourth year of high school, These data mean that the secondary school was 15 and 35. holding more than twice as large a proportion of pupils in the second year of high school, three times as large a proportion in the third year, and more than twice as large a proportion in the fourth year, in 1930, as it had held in 1912.

Undoubtedly society will continue to encourage even greater proportions of young people of secondary-school age to take advantage of lengthened periods of education. Are the high schools meeting the challenge? They can not meet it adequately unless they are prepared to provide for greatly increased ranges of ability and for widely diverging interests, aims, and needs.

S. TECHNIQUES AND A PRELIMINARY VIEW OF THE DATA

The preliminary inquiry.—Early in 1930 a 1-page, preliminary, inquiry form was addressed to the principals of the high schools on the mailing lists of the United States Office of Education, at that time about 22,000 schools. Twenty-



These comparisons taken from Office of Education data are made on the basis of the traditional (4-year) high school.

eight provisions for individual differences, derived from a careful analysis of the literature, were listed on the form and space was provided under a twenty-ninth item for the addition of other provisions not included in the printed list. Respondents were asked to indicate, first, those provisions for individual differences which were in use in their schools.

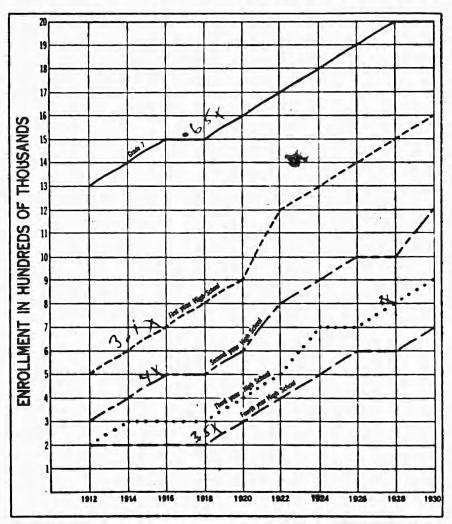


FIGURE 1.—Enrollments in grade 7, and in the last four years of the secondary school, for the even-numbered years from 1912–1930, inclusive

and second, those provisions which they estimated to be operating with unusual success. More than 11,000 replies had been received at the time tabulations were started.

Tabulated replies.—Eight thousand five hundred and ninetyfour forms were selected for tabulation. This number included

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each form on which any provision for individual differences was indicated as being put into practice with unusual success. It also included all other forms which were filled out by the respondents in every detail. In those cases where one or more provisions for individual differences were reported on the form to be in use with estimated unusual success, data occasionally omitted from the form, such as total enrollment or type of organization of the school, were supplied from the files of the statistical division of the United States Office of Education. All other forms carrying incomplete data were discarded. Therefore, the tabulated replies, to a certain extent, are the responses of a selected group of schools, the first factor of selection being the act of returning the form. As a group, the schools returning the form probably were doing more to provide for the individual differences of their pupils than the group not replying. The second factor of selection was the investigator's policy of securing certain omitted data, referred to above, only for schools where one or more provisions for individual differences were indicated to be operating with unusual success. The net result was that this selected group of 8,594 schools undoubtedly presents a picture of the status of provisions for individual differences considerably more favorable than the actual situation prevailing in the 21,569 schools to which the inquiry was addressed.

Geographical distribution of responses to the inquiry.—The schools of every geographical area of the country participated in this study. (Table 1.) In fact every State⁵ in the Union was generously represented in the tabulated replies to the preliminary inquiry. Naturally, maximum numbers of returns were received from such States as Pennsylvania (633), New York (559), Ohio (537), and Illinois (535), where secondary schools are relatively numerous, and minimum numbers of returns were received from such States as Nevada (12), Arizona (34), New Mexico (33), District of Columbia (14), Delaware (15), and Rhode Island (21), where the total numbers of secondary schools are limited by such factors as sparsity of population or restricted geographical boundaries. The percentage of schools from each State, represented in the tabulated returns, ranged from 19 in Georgia and Oklahoma,

I Term used also to apply to the District of Columbia.

and 21 in Texas and Tennessee, to 70 for Rhode Island, 73 for the District of Columbia, 76 for New Jersey, and 77 for Connecticut. The average percentage of schools from all States represented in the tabulated returns was 40.

TABLE 1.—Number of schools in each geographical area to which the preliminary inquiry was addressed, and number and percentage of tabulated replies

	Number of schools to	Tabulated replies				
Section	which the form was addressed	Number	Per cent			
1	2	•	4			
New England Middle Åtlantic Southern Middle West West	940 2, 472 6, 444 9, 676 2, 037	581 1, 483 1, 730 8, 906 1, 052	6: 6(27 44 5.			
Total	21, 569	8, 594	4			

Size of schools.—Schools from the smallest to the largest were represented in the tabulated results. The fact that more than one-half of the schools enrolled 250 or fewer pupils (Table 2) reflects the preponderance of small high schools throughout the country. Each of 1,605 schools had an enrollment of more than 500 pupils.

TABLE 2.—Tabulated replies to the preliminary inquiry form, classified according to total enrollment

Enrollment group	Frequency	Enrollment group Fr	equency
50 or less	1, 476	751 to 1,000	304
		More than 1,000	
101 to 250	2, 391		
251 to 500	1, 128	Total	8, 594
501 to 750	561		

Type of organization.—The tabulated replies included relatively large numbers of schools of every type of organization. (Table 3.) Almost exactly one-half of these schools are of the unreorganized type including grades 9 to 12, reflecting the present dominance of this particular type of organization. The "All others" group includes schools of atypical organization as shown by the grades included.

TABLE 3.— Tabulated replies to the preliminary inquiry form, classified according to types of school organization

Type of organization	Frequency	Type of organization	Frequency
9 to 12	4, 304	6 to 11	105
		All others	
8 to 11	638		
7 to 9	614	Total	8, 594
10 to 12	308		

Two important facts revealed by tabulated replies to the preliminary inquiry.—When the data from the tabulated replies to the preliminary inquiry are assembled, as in Table 4, at least two important facts are revealed. First, the 28 items there listed are, for all practical purposes, an exhaustive list of provisions for individual differences now being made by the secondary schools of the United States since of the 8,594 principals whose replies were tabulated 8,493 reported no additional provisions under the twenty-ninth item. In other words, only 101 principals had any additional provision which they considered worth reporting and which it seemed necessary to tabulate. Forty-five of these 101 principals mentioned "supervised study." This item was purposely omitted from the printed list because it will receive much indirect attention through an analysis of several other provisions, notably those plans characterized by the unit assignment. Other provisions listed under item 29 were: Extracurriculum activities, work-study-play or platoon plan, group-study plan, practical-arts courses for over-age pupils, wide variety of courses, correspondence study. summer schools, private tutoring, sight-conservation classes. speech-correction classes, lip-reading classes, and Braille rooms.

A second fact of fundamental significance revealed by the data, as organized in Table 4, is that provisions for individual differences, in general, are innovations in the secondary schools. With the exception of items 1 and 2, less than half of the schools report the use of any single item listed in Table 4. The tabulated results show that each provision for individual differences is used by a comparatively small percentage of the schools reporting, and is used with estimated unusual success in an amazingly small number of schools.

⁶ See Pt. II.

In other words, the facts and theories concerning individual differences, which have filled library shelves to overflowing during the past quarter of a century are still reposing on library shelves, or echaing through the lecture halls of schools of education, much more generally than they are incorporated in the practice of secondary schools. No fact has been established more firmly by this study than the fact that comparatively few schools are making thorough provisions for individual differences. Nevertheless, some schools are realizing now in practice the best that is known in the matter of providing for individual differences and many other schools are fast approaching the same desirable status.

TABLE 4.—Frequencies with which various provisions for individual differences were reported in use, or in use with unusual success, by 8,594 secondary schools

Provision	Us		unu suce	Col- umn 4 divided	
	Num- ber	Percent	Num- ber	Percent	by col- umn 3
	3	3	4	5	
1. Variation in number of subjects a pupil may carry	6, 428	75	795	9	0.1
2. Special coaching of allow pupils	5, 099	50	781	9	
3. Problem method	4, 216	49	788	5	1 :
4. Differentiated assignments	3, 604	42	540	6	1
8. Advisory program for pupil guidance. 8. Out-of-school projects or studies	3, 451	40	439	5	1 :
7. Homogeneous or ability grouping	2,740	32	721 -	8	-:
9. Special classes for purily who have falled	2 612	30	350	1	-
8. Special classes for pupils who have falled	2 611	30	323	4	
0. Long-unit assignments	2, 312	27	349	4	1
1. Project curriculum	2, 293	27	365	4	
2. Contract plan		27	465	5	
2 Individualized instruction	2 145	25	300	4	
4. Vocational guidance through exploratory courses	1, 911	22	186	2	
A Educational guidance through exploratory courses	1. 900	22	198	2	
6. Scientific study of problem cases	1, 343	16	146	2	
7. Psychological studies	1, 077	12	70	1	1
8. Opportunity rooms for slow pupils	946	11	172	2	
19. Morrison plan. 10. Special coaching to enable capable pupils to "skip"	737	9	175	2	
M: Special coaching to enable capable pupils to "skip"	1	100	A marie		
a grade or half grade	726	8	114	1	
1. Promotions more frequently than each semester	686	8	103	1	
Zi. Remediai classes of rooms	090	7	90	1	
Adjustment classes or rooms		6	55	1	
M. Modified Dalton plan	486	6		1	
85. Opportunity rooms for gifted pupils	322	4	60	1	
20. Hestoration classes	101	2	24	0	
27. Dalton plan	162	2	15	0	
28. Winnetka technique		1	14	0	



Frequencies of use and of use with estimated unusual success.—No attempt will be made at this point to examine in exacting detail the data from the preliminary form. Later in this monograph each provision for individual differences will be presented in the light of all available data. In passing, one may observe that "variation in number of subjects a pupil may carry" and "special coaching of slow pupils" are the most frequently used methods of providing for individual differences (Column 2, Table 4), the former being used by three-fourths, the latter by three-fifths, of all schools from which replies were tabulated. At the other extreme the least-used provisions are the Dalton plan and the Winnetka technique, the former being used by 2 per cent, the latter by only 1 per cent of all schools from which replies were tabulated.

The upper half of the distribution of the 28 provisions for individual differences, in the order of their frequency of use. may be tentatively classified as follows: (1) Variation in number of subjects a pupil may carry (item 1), (2) guidance through advisory programs or exploratory courses (items 5 and 14), (3) out-of-school projects or studies (item 6), (4) homogeneous grouping (item 7), (5) special classes for slow or failing pupils (items 2 and 8), and (6) a variety of plans characterized by the unit assignment 7 (items 3, 4, 9, 10, 11, 12, and 13). The lower half of the distribution reveals additional plans characterized by the unit assignment (items 19, 24, 27, and 28), several varieties of special classes, some of which are primarily for the gifted or very bright, but most of which are for the slow (items 18, 20, 22, 23, 25, and 26). and three provisions which appear to belong in more or less separate categories, namely, "scientific study of problem cases," "psychological studies," and "frequent promotions."

No provision is reported in use with estimated unusual success by more than 9 per cent of the schools whose replies were tabulated. (Column 5, Table 4.) The various provisions tend to be ranked in the same order for estimated unusual success, as for use. Among those provisions most noticeably displaced in Column 5 are homogeneous grouping and the contract plan.

^{&#}x27;See Pt. II.

Another way of showing the extent to which each provision is used with estimated unusual success is illustrated in Column 6. Each percentage shown in this column is derived by taking as a base the number of schools reporting the given provision in use, rather than the total number of schools whose replies were tabulated. From this viewpoint the six most successful provisions, in the descending order of percentages of estimated unusual success are: Homogeneous grouping, the Morrison plan, opportunity rooms for gifted pupils, differentiated assignments, the contract plan, and opportunity rooms for slow pupils. But the percentages of estimated successful use of these six items range from 26 to 18. In other words, only one principal in four or five using any one of these plans has any considerable measure of confidence in its success.

The 28 provisions classified.—Later careful study of the 28 provisions for individual differences listed on the preliminary inquiry form has shown that the entire group may be reduced to seven categories, namely, (1) homogeneous grouping, (2) special classes, (3) plans characterized by the unit assignment, (4) scientific study of problem cases, (5) variation in pupil load, (6) out-of-school projects and studies. and (7) advisory or guidance programs. Of the seven. the first three homogeneous grouping, special classes, and the unit assignment—have been found to be core elements in a typically successful program to provide for individual differences. These three form a kind of trinity, a sort of three-in-one answer of the Nation's outstanding schools to the problem of providing for individual differences. There is no evidence that intrinsically these three plans are alternative rather than complementary procedures. its own peculiar function to perform. Some readers may be inclined at first glance to regard special classes as homogeneous groups. It is true that sometimes special classes are more homogeneous than regular classes. However, more frequently they are more heterogeneous than regular classes. Therefore, special classes and homogeneous grouping constitute separate categories. This point is expanded in Chapter VII, Part I, which deals with special classes.

Summary of techniques and sources of data.—In the preceding pages sufficient data have been presented from the preliminary inquiry to orient the reader for ensuing chapters. The preliminary inquiry, the first step in a carefully formulated plan of investigation, served two purposes. It yielded an overview of provisions for individual differences as practiced throughout the entire country, and it helped to locate, for further intensive study, schools having some measure of confidence in the success of their practices. Still other schools were selected for further intensive study on the basis of the opinions of informed people not directly connected with the individual schools. City superintendents, members of State departments of education, and specialists in various educational fields cooperated in this phase of the investigation.

Schools finally selected for detailed, intensive study were approached with comprehensive follow-up inquiry forms covering the provisions for individual differences reported to be operating in the respective schools with unusual success. Some idea of the scope of the investigation at the follow-up level may be obtained by referring to the list of follow-up forms which were used.

	Follow-up inquiry forms 1. Homogeneous or ability grouping	Number of pages 23 23 15 16
	5. Morrison plan	15
	6. Special classes. 7. Certain interrelated provisions for individual differences— Differentiated assignments, Long-unit assignments, Laboratory plan, Individualized instruction, and the Contract	17
	plan	25
	8. Problem method.	24
	9. Project method.	24
	10. Out-of-school projects and studies	9
	11. Variation in number of subjects a pupil may carry	7
1	12. Promotions more frequently than each semester	2
	12. Promotions more frequently than each semester	1
	Total	201

Of the total 201 pages, 48 pages consisted of duplicated items to make possible comparative studies of certain provisions suspected of differing in name only. In other words, two pages of items used with Form No. 1, above, were duplicated on Forms Nos. 3, 4, 5, 7, 8, and 9; and 18 pages of items used on Form No. 7, above, were also used on Forms Nos. 8 and 9. Allowing for duplication, 154 pages of follow-up inquiry material were prepared and used to check on the schools reported to have unusually successful provisions for individual differences. No follow-up forms dealing with guidance are listed because guidance was studied intensively as another project of the National Survey.

Visits to schools, observation and interview.—For each provision the best replies on the corresponding follow-up form were selected. Thus for each provision a group of highly selected schools was isolated for intensive study. Finally, a sampling of schools from each highly selected group was visited and practices were studied at first-hand through observation and interview. The mass of data accumulated by the methods briefly referred to above has been carefully analyzed and interpreted. This monograph is the result of an effort to make the findings readily available to the reader.

The 1928 inquiry.—In 1928 an inquiry concerning individual differences was addressed by the United States Office of Education to all 4-year, unreorganized high schools and to all senior high schools in cities of 2,500 or more inhabitants. At many points the data of this inquiry were comparable to the data secured in the present study. Wherever possible, comparisons were made of the two sets of data with a view to discovering trends. No trends were observable, due probably to the comparatively brief space of time intervening between the two inquiries. At all points where comparisons were made the two studies confirmed each other. Because of the similarity of comparable findings, tabular data from the 1928 inquiry have been omitted in this report. However, the text of ensuing chapters contains references to the 1928 inquiry at points where the parallel findings are particularly important.

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4. SUBJECT MATTER OF PARTS I, II, III, AND IV

Homogeneous grouping and special classes.—The first part of this monograph deals with homogeneous grouping and special classes. Under homogeneous grouping are included all endeavors to improve the teaching and learning environment through the refined classification of pupils. Under special classes are included attempts to provide for extreme deviates in abilities or needs, or both, by means of: Special coaching of slow pupils, special classes for pupils who have failed, opportunity rooms for slow pupils, special coaching to enable capable pupils to "skip" a grade or half grade, remedial classes or rooms, adjustment classes or rooms, opportunity rooms for gifted pupils, and restoration classes.

Plans characterized by the unit assignment.—The second part of this monograph is an analytical and comparative study of the practices of selected schools under the following terms: The Morrison plan, the Dalton plan, the Winnetka technique, differentiated assignments, long-unit assignments, individualized instruction, contract plan, laboratory plan, problem method, and project method. Parts I and II, therefore, deal with the core elements of what has been found to be the typically successful program to provide for individual differences.

Other provisions for individual differences and planning a program.—Data are presented in the third part of the monograph for a miscellaneous group of provisions for individual differences. The group includes: Frequent promotions, psychological studies, scientific study of problem cases, out-of-school projects or studies, and variation in pupil load. The final chapter of Part III reviews certain selected facts and relationships which should be considered by those responsible for developing a program to provide for individual differences in a specific school and community. Part III concludes the study of provisions for individual differences.

Procedures in marking and promotion.—Throughout Parts I, II, and III frequent references are made to marking and promotion in schools which have been selected for study primarily because of their outstanding provisions for individual differences. In Part IV, which deals with procedures in marking and promotion, certain data from the schools

studied in Parts I, II, and III are employed for illustrative and interpretative purposes. In addition, in Part IV data are presented concerning marks and marking systems and plans for promotion in use in 258 schools chosen for study without reference to what they were or were not doing to provide for individual differences. Hence Part IV reflects a wide variety of procedures in marking and promotion in schools ranging all the way from those doing little or nothing to provide for individual differences to those which are outstanding for their programs to provide for individual differences. In many schools not at all distinguished for provisions for individual differences innovating procedures in marking and promotion adapted to the local situations have been found and described. In other schools, with more expanded programs to provide for individual differences, certain consistent and complementary modifications of previously existing plans for marking and promotion have been established. These modifications also are set forth in Part IV. Perhaps one scarcely need add that the studies of provisions for individual differences and of procedures in marking and promotion have been included in a single volume because of the close and inevitable relationship which obtains between the two studies.

PART I. HOMOGENEOUS GROUPING AND SPECTAL CLASSES

CHAPTER I: A REVIEW OF THE LITERATURE

1. FOUR AXIOMS

Homogeneous grouping is refined classification.—Certain facts about homogeneous grouping merit acceptance at their face value. First, homogeneous grouping when undefined is a term of doubtful meaning. Defined never so well it yet describes an uncertain and unstable adaptation of the educative environment wherein teachers teach and learners learn. Referred to practice it can never signify complete homogeneity but only reduced heterogeneity. Obviously a really homogeneous group would consist of but one individual and he would need reclassifying from subject to subject and from day to day. Hence, it is rational to regard attempts at homogeneous grouping as practical efforts to refine present methods of classification.

Homogeneous grouping and ability grouping not synonymous.—Second, homogeneous grouping comprises more than ability grouping. For instance, homogeneous grouping is repeatedly based on pupils' needs, as in the segregation of pupils for remedial teaching in certain major subjects. Also it is frequently based on pupils' aims or objectives, as, for example, in college-preparatory and non-college-preparatory mathematics, Latin, or English. Where schools are large enough to permit it, homogeneous grouping with reference to pupils' needs, aims, or objectives is frequently realized through differentiated courses and curriculums. Further segregation on the basis of ability to do the work of the course then may take place. \ It is this second procedure that is properly termed ability grouping.

Homogeneous grouping most needed in democratic systems of education.—Third, although a chief objection to homogeneous grouping brands it as undemocratic, nevertheless it is a procedure born of the necessities of a highly democratized system of education. In an aristocratic system of education

those pupils receiving secondary education, at entrance to the secondary school, are a highly selected group. They are set apart by social and economic forces which operate automatically and with little relation to what appear to be the best interests and needs of all the people. This high degree of selection results in a correspondingly high degree of homogeneity of the secondary-school population. Pupils so preferred probably possess academic ability which is much above the average of the general population in the same age group. They are also far more homogeneous as to needs, aims, and objectives than the general population of the age group from which they are chosen. In such a social order the comprehensive American high school, with its heterogeneous student body representing almost every possible variation in abilities, needs, and objectives, has no counterpart. Therefore, it is natural that methods of classification more refined than the traditional grouping into grades, largely on the basis of chronological age, should seem more imperative in American schools than in the schools of countries where an aristocratic social order prevails.

More facts are needed.—Fourth, the questions of whether and how to group have not yet been adequately answered. Moreover debate will not answer them. Data from intelligent practice and controlled experimentation are needed.

S. AN ANALYTICAL SURVEY OF THE LITERATURE FROM 1910 TO 1988

Sources of materials and questions asked.—In December, 1929, the writer¹ prefaced his report of seven controlled experiments in homogeneous grouping with an analytical survey of theoretical, practical, and experimental studies which had been made previously. For the purposes of his survey a comprehensive bibliography was prepared consisting of 141 magazine articles, books, and theses dealing with classification or grouping. The list was drawn from all authentic sources including the leading educational magazines and periodicals and authoritative reports of unpublished theses. Both elementary and secondary grades were represented. Among the questions to which answers were



¹ Billett, Roy O. The Administration and Supervision of Homogeneous Grouping. The Ohio State University Studies, Contributions in School Administration No. 4, The Ohio State University Prem, Columbus, Ohio, 1932. Chs. I, II, and III.

sought were the following: In what years did interest in homogeneous grouping develop? When was this interest greatest as indicated by the number of articles published? What types of studies have been made of grouping? What bases of grouping have been used? Does the consensus of opinion concerning the value of grouping vary with the basis used? The following facts furnish satisfactory answers to these questions.

The development of interest in homogeneous or ability grouping.—In the list of 141 studies analyzed only 1 dated back so far as 1910. No articles appeared for the years 1911–1916, inclusive. (Table 1.) One article appeared in 1917; 4 in 1919; and 9 in 1920. During the biennium 1919–20 considerable interest in grouping had developed, 13 of the studies being dated within this interval. This interest greatly increased during the ensuing two years and probably had not abated during the years 1927 and 1928, although the frequency for these two years is not so large as the frequency for 1925 and 1926, because the bibliography was prepared early in 1928.

TABLE 1.—Types of studies represented in 140 1 articles dealing with homogeneous grouping

	The			1	Experie	nental	and p	ractica	studi	88			
Date		retical ission	Un	contro	lled	Partl	y cont	rolled	Thor	7 con-			
	For		Por	Doubtful	Doubtful		For Doubtful		Por	Doubtful	Against	Total	
1	2	3	4	4	5	6	7	8		10	11	12	13
1917-18. 1919-20. 1921-22. 1923-24. 1925-26. 1927-28.	1 5 8 7 8	3	1 12 26 25 16 8	3 4 2 1	1 8	1	i		2	1	1	1 13 34 39 33 20	
Total	29	3	88	10	4	1	1		2	1	1	140	

¹ One article appearing in 1910 omitted for tabular convenience.

Types of studies discovered by the analysis.—Thirty-three of the one hundred and forty-one articles were theoretical discussions of homogeneous grouping. (Table 1.) Thirty favored homogeneous grouping and 3 opposed it. One hun-

dred and two articles dealt with uncontrolled experimental or practical studies. Eighty-two of these studies involved the actual formation and study of homogeneous groups. Twenty were measurement studies involving no grouping. Eighty-eight of these uncontrolled experimental or practical studies definitely favored homogeneous grouping, 10 were doubtful of its value, and 4 opposed it. Of the 6 remaining studies 2 were partly controlled and 4 approximated thorough control.

Bases of grouping used.—Only 90 of the studies indicated in fairly definite terms the basis of grouping used. Ten different bases were reported. (Table 2.) These bases were reported in use in various combinations in 45 of the 90 studies. In 25 of the 90 studies mental age or intelligence quotient from a group mental test was used. In 7 cases teachers' judgments, marks, or ratings were used. In the remaining 13 cases the bases were rather evenly divided among intelligence quotient from an individual mental test, mental age from an individual test, scores from educational tests, educational age, accomplishment quotient, chronological age, and physiological age.

TABLE 2.—Analysis of the 90 experimental and practical studies which definitely indicated the basis of grouping used

Date of publication																					
Basis	1919-20			1921-22			1923-24			1925-26			1927-28			Total					
	F	D	טפ	DU	D U	ט	U	U	U	F	D	U	JF	D	U	F	D	U	F	D	U
1	8	3	4	8	6	7	8		10	11	12	13	14	15	16	17					
Teachers' judgments, marks, or ratings	1			2			2						1			17					
Intelligence quotient, individual test	3																				
Intelligence quotient, group test	1		117	4			6	1		6			1	1		19					
Mental age, group test	-;-			2			1	1		2											
Educational age							1			i			111		1	8					
Chronological age	î							231								i					
Physiological age																1					
the above factors	2			14			17	1		8	1		8			4.5					
Total	10	0	0	23	0	0	25	3	0	19	0	0	5	1	1	90					

One of these articles appeared in 1917–18.
This article appeared in 1910-11.

F—Results judged to be favorable to homogeneous grouping.

D—Meaning of results doubtful.

U—Results judged to be uniavorable to homogeneous grouping.

It is interesting to note that the article which appeared in 1910 recommended physical age determined by pubescence as the basis of classification. In his summary the author states that such classification is easy and practical, that it is more agreeable for boys of the same development to associate with each other, and that in schools where physical examinations are impossible a classification according to height probably would produce the same results. The article listed for 1917 suggests teachers' observations and marks as the basis for grouping.

Opinion as set forth by these studies favors homogeneous grouping.—In all but 5 of the 90 studies (Table 2) those who practiced or experimented with homogeneous grouping judged its results to be desirable. In four of these five instances doubt was expressed and in the remaining instance definite conviction was expressed that the results of homogeneous grouping were undesirable. Regardless of the basis used those most intimately concerned with homogeneous grouping in these salies have considered it a valuable practice.

. ANALYSIS OF THE LITERATURE SINCE 1988

To bring the analysis of the literature down to the date of writing, a bibliography was prepared consisting of 41 additional representative magazine articles, books, or theses on classification or grouping. It is superfluous to reproduce the titles here. The bibliographies accompanying the studies of Rankin, Turney, and Billett contain all articles analyzed in this list and in the preceding list of 141 articles. Specific reference will be made here to those studies the findings or procedures of which are quoted.

Theoretical considerations of whether and how to group.— Eight of the forty-one studies deal with theoretical considerations in part suggested by experimental studies. For example, Symonds³ after a discussion of certain more or less theoretical criticisms of homogeneous grouping in the elementary schools



¹ Rankin, Psul T. Pupil Classification and Grouping. Review of Educational Research, 1: 200-280, June, 1931.

Turney, Austin H. The Status of Ability Grouping. Educational Administration and Supervision, 17: 21-42, 110-127, January-February, 1931.

Billett, Roy O., op. cit., pp. 128-155.

³ Symonds, Percival M. Homogeneous Grouping. Teachers College Record, 22: 50:-517, March, 1951.

suggests that the following tendencies should govern the grouping of pupils in the secondary school:

1. Group by subject where possible.

2. Plan to make individual adjustments whenever necessary.

3. In case it is not possible to group by subject throughout, because of administrative difficulties, group by one or two subjects in which it is most difficult to care for individual differences in the classroom, and allow the same grouping to continue in other subjects. In many subjects, particularly trade courses, commercial subjects, mechanical drawing, and the like, it is possible to provide individual contracts and work sheets so that a high degree of individualization of the work is possible.

4. Where schools are so small that only one class in a subject is held, adaptation of the instruction to individual differences must be taken care of by the teacher in the classroom either by subclass grouping or

by individual instruction.

5. In most subjects the tendency is toward greater enrichment rather than toward differences in the speed with which ground is covered. In skill subjects, like language, where enrichment is also likely to lead to greater proficiency, flexibility in shifting from group to group on the basis of achievement is desirable.

Experimental studies under practical school conditions.—Six of the forty-one studies compare the achievement of pupils in homogenous groups with the achievement of pupils of similar ability in heterogenous groups. Four of the six studies deal with pupils in the elementary grades. One of the remaining two studies ' was conducted by Rankin and is reviewed under the analysis of controlled studies of grouping which follows in subsequent pages. The other by Holy and Sutton 5 has been reviewed by Rankin.

Prediction of a "best" basis of grouping.—Eight of the fortyone studies seek to predict a "best" basis for grouping. These are studies of the correlation of various measures with the pupils' school success as judged either by teachers' marks or achievement tests or both. It has been pointed out elsewhere that long and controlled experimentation is necessary before any one of several bases can be demonstrated to be "best." In their very nature correlation studies can only suggest hypothetical bases, the merit of which must be tested by

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Rankin, Paul T., op. cft., pp. 223-224.

Holy, T. C. and Sutton, D. H. Ability Grouping in the Ninth Grade. Educational Research Bulletin, 9: 419-422, October, 1982. The Ohio State University.

Rankin, Paul T., op. cit., p. 226.

controlled experiment.7 Two of these recent studies will be referred to here.

Kefauver studied the relation of pupil success, as measured by achievement tests and relative ranks assigned the pupils by the teachers, to several factors which entered into a composite basis on which these pupils had been grouped.8 These factors were: (1) Average of school marks obtained in grades 5 and 6, (2) teacher's estimate of capacity, (3) teacher's estimate of application, (4) Multi-Mental Test score, (5) intelligence quotient obtained from score on the Multi-Mental Test, (6) Thorndike-McCall Reading Test T-score, (7) Woody-McCall Arithmetic Test score, and (8) Monroe Reasoning (arithmetic) Test score.

On the basis of the evidence from his study and from earlier studies Kefauver suggests that whatever the composite measure used for making a common distribution of pupils to ability groups for all subjects it should include: (1) A composite of marks obtained in the earlier grades or a rating of capacity by the teachers in these grades, or both; (2) the intelligence quotient or the score on a mental test; and (3) when it is expedient to extend the program of testing, a general achievement test, or a composite of a number of special achievement tests. When a different distribution is made for each subject it is suggested that the composite measure include: (1) A combination of marks obtained in the preceding grades or a rating of capacity by the teachers in these grades or both; (2) scores on an achievement test covering or directly related to the content of the course; and (3) the intelligence quotient or the score on a mental test.

Marzolf studied the correlation of three factors with seventh-grade marks. The factors studied were intelligence quotients, educational quotients, and the average of fifth and sixth grade marks. He obtained the highest coefficient (0.83) when a combination of the average of fifth and sixth grade marks with intelligence quotient was correlated with seventh-grade marks.

¹ Billett, Roy O., op. cit., pp. 13–14.

¹ Kefauver, Grayson N. The Validity of Bases for Forming Ability Groups. College Record, 31: 99-114, November, 1929.

Marzolf, Stanley S. The Classification of High-School Students. School and Society, 22: 881-682, December 27, 1900.

Surveys or reviews of the literature.—Four of the forty-one studies were surveys or reviews of the literature dealing with classification or grouping. Two of these reviews are especially thorough and comprehensive.¹⁰

Rankin's conclusions from a careful study of available data in the field are:

- 1. The evidence slightly favors homogeneous grouping, as contrasted with heterogeneous grouping, particularly where adaptations of standards, materials, and methods are made.
- 2. The evidence regarding the attitudes of teachers toward homogeneous grouping is that most teachers prefer to work with homogeneous rather than mixed groups.
- 3. The evidence regarding the relative merits of various bases of grouping is conflicting and inconclusive.
- 4. The evidence regarding the relative merits of various types of adaptation of standards, materials, and methods is inadequate to form a judgment.
- 5. The evidence indicates greatest relative effectiveness for dull children, next greatest for average children, and least (frequently harmful) for bright children. 11
- 6. The evidence regarding the particular grade levels or subjects in which homogeneous grouping is particularly effective is inadequate to form a judgment.
- 7. The evidence regarding the effect of homogeneous grouping upon characteristics of pupils other than knowledges and skills is highly subjective and can not be said to be conclusive.

Turney's conclusions are not greatly at variance with Rankin's conclusions.

Variation of individual abilities and resulting overlapping of the scores of homogeneous groups on achievement tests.—Three of the 41 studies directly or indirectly show that no group can be completely homogeneous. Hull " tested 107 first-year high-school pupils with 35 standard psychological tests involving a considerable variety of functions. The data when organized indicated that the distribution of traits or abilities possessed by a given individual follows the normal law much as does the distribution of the amounts of any given trait or ability possessed by a number of individuals (p. 46).



[&]quot; Rankin, Paul T., op. cit.

Turney, Austin H. The Status of Ability Grouping. Educational Administration and Supervision, 17: 21-42, 110-127, January-February, 1991.

u Italies not Rankin's. Compare Billett, Roy O., op. cit., pp. 80-82, 108, 109.

¹⁰ Hull, Clark L. Aptitude Testing. Youkers-on-Hudson, N. Y., World Book Co., 1938, pp. 45-49.

In other words, the extent of trait differences for the average individual was found to approach rather closely the amount of difference found in a normal group with respect to any single trait (p. 47). Hull has estimated that the best person in a normal group is from three to four times as efficient as the poorest. Assuming a variability within the individual 80 per cent as great as the variability of a normal group, the average individual's best potentiality must be between two and one-half and three times as good as his worst (p. 49). Therefore, one may infer that it makes considerable difference what individual traits or abilities are made the basis of grouping. On one trait or ability the individual might be in the highest group, on another in the middle group, and on a third, in the lowest group. The inference also is justified that whatever traits or abilities are selected as bases they should be traits or abilities predictive of the pupil's probable success with the course to be taken.

Burr concludes from a study of overlapping of homogeneous groups on certain achievement tests that for the elementary grades of the six cities studied the range of a homogeneous group is on the average 78 per cent of the total grade range.¹³

Hughes "shows sufficient evidence to justify the inferences (1) that homogeneous groups formed on the basis of the results of one intelligence test will overlap on the basis of scores either from another test or another form of the same test, and (2) that homogeneous groups will overlap in scores earned on any achievement test. When he says the realization of homogeneous grouping is "all but impossible" (p. 25), the context leads one to suspect that he has not accepted completely the fact that reduced heterogeneity may be worth while.

Effect of grouping upon the mental attitude and personality of pupils.—Two of the forty-one studies investigate the influences of homogeneous grouping upon pupil attitude and personality. Goodrich 15 analyzed the opinions of 400 su-

¹⁵ Burr, Marvin Y. A Study of Homogeneous Grouping. Contributions to Education No. 457. New York, Teachers College, Columbia University, 1931, p. 69.

Hughes, W. Hardin. How Homogeneous is a Homogeneous Group. Nation's Schools,
 21-25, October, 1930.

¹⁵ Goodrich, T. V. Influence of Homogeneous Grouping on Pupil Personality, School Executives Magazine, 50: 259-253, 290, February, 1931.

perintendents, principals, and teachers who responded to a questionnaire on the subject of both teacher and pupil attitudes to homogeneous grouping. He found that:

- 1. For every person believing homogeneous grouping to have an unfavorable effect upon teachers' attitudes, there were six or more who believed the effect favorable.
- 2. On 9 of 14 points relating directly to the attitude and behavior of pupils the opinion is at least 4 to 1, and on one point approximately 12 to 1, in favor of homogeneous grouping.
- 3. A greater percentage of neutral opinions appeared on points relative to bright pupils than on those relating to slow pupils.

Goodrich finds wide agreement among those who answer the questionnaire that under homogeneous grouping, teachers are more likely to study individual needs, to sympathize with slow pupils, and to respect pupil personality.

The respondents agree that slow pupils are more likely to participate in school life and to enjoy it under homogeneous grouping. They are less likely to be discouraged, feel inferior, or develop habits of idleness or antisocial attitudes.

The replies indicate less general agreement that in homogeneous groups bright pupils are more likely to develop leadership, to participate in and to enjoy school life, and less likely to form habits of conceit and idleness, to hold slow pupils in contempt, or to form antisocial attitudes.

Turney and Hyde 16 carry the question of attitudes directly to the pupils themselves. The following 12 questions were addressed to 645 pupils in grades 7A, 8B, 8A, 9B, 9A, and 10B, in the junior high school. Homogeneous grouping in the school where the investigation was conducted was largely on the basis of achievement.

- 1. Have your parents ever urged you to try to be placed in another group?
- 2. Has your teacher ever urged you to work harder in order that you could be placed in a higher group?
- 3. Has your teacher ever urged you to do better work because you are not doing as well as you could?
 - 4. Has your teacher ever suggested that you were working too hard?
 - 5. Has anyone ever suggested that you were working too hard?
- 6. Have your parents ever scolded or blamed you because you were not in as high a group as they would like to have you?

M Turney, Austin H. and Hyde, M. F. The Attitude of Junior High School Pupils Toward Ability Grouping. School Review, 39: 507-607, October, 1931.

- 7. Have any other pupils ever said anything to you that would make you feel that you would like to be in another group?
 - 8. What comments (referring to question 7) have been made?
- 9. Would you be happier if the pupils in your school were not placed in sections?
 - 40. What are your reasons for answering question 9 as you did?
- 11. Do you think that you get along better in your work because you are in the group that you are in?
- 12. Have you ever been "raszed" or "kidded" because you were in a high or low section?

The writers conclude from an analysis of the answers that "the great majority [of pupils] are happy and satisfied, that they look on school as a serious business from which they want to get the most possible, and that they accept and believe in the grouping that exists as the best situation for it . . . " " . . . from the testimony . . . one would be justified in concluding that the majority, if not all, are better off, in so far as their school work is concerned, under the existing plan of ability grouping than they would be under heterogeneous grouping." 17

Variation of teaching procedure and content.—Ten of the fortyone studies deal with practical attempts at differentiation
of subject matter, or of teaching procedure or of both. Nock 18
reports the degree of success attained in South Philadelphia
High School for Girls with extension classes for low-ability
girls where both subject matter and teaching procedures are
adapted to the needs of the pupils.

Broady 10 has attempted to formulate present best opinion and practice with respect to homogeneous grouping as well as with respect to other provisions for individual differences.

Summary of trends during 1929-1931.—Sane and tempered reviews of all available data have appeared during these years. More careful inquiries have been made into pupil and teacher attitudes as affected by grouping. Differentiation of subject matter and of teaching procedure are being seriously attempted. Evidence has increased to show that so-called homogeneous grouping is in effect reduced hetero-

¹⁷ Op. cit., p. 608.

¹⁸ Nock, Anna W. Low I. Q's in the High School. School Review, 38: 678-679, November, 1930.

Broady, Knute O. School Provision for Individual Differences. Contributions to Education No. 395. New York, Teachers College, Columbia University, 1920, p. 101.

geneity or a refinement of existing classification. Controlled experimentation has continued. At least one purely theoretical discussion of sufficient scope to serve as a doctor's dissertation in one of the greatest universities in the country has appeared.

In ensuing paragraphs a summary of the evidence from controlled experiment from 1925 to the present time is presented.

4. CONTROLLED STUDIES OF GROUPING

No studies involving anything resembling carefully equated experimental and control groups were published before 1924. In that year one such study appeared. (Table 3.) This study was conducted by Cook in Topeka, Kans.²⁰

The next controlled attempt to study the grouping problem appeared in 1925 in the form of a doctor's dissertation by Purdom.²¹ This was followed by Martin's ²² and Baird's ²³ studies reported in 1927; by Worlton's ²⁴ study in 1928; by Tharp's ²⁵ and Billett's ²⁶ studies in 1929; and by Rankin's ²⁷ study in 1931.

These eight studies present such evidence as is available from controlled experiments with grouping. They suggest certain theories concerning grouping and are especially valuable as a source of techniques for further study.

Subject matter investigated.—These controlled studies have dealt with English (including reading and spelling) more frequently than with any other subject. (Table 3.) History or social studies are represented three times—in Cook's,



Cook, R. R. Results of Homogeneous Grouping in High-School Classes. Twenty-third Yearbook, National Society for the Study of Education, 1924, pp. 302-312.

n Purdom, T. Luther. A Scientific Study to Determine the Value of Homogeneous Grouping Made on the Basis of Intelligence Tests. Doctor's dissertation, University of Michigan, 1925.

²³ Martin, William Harris. The Results of Homogeneous Grouping in the Junior High School. Doctor's dissertation, Yale University, 1927.

Baird, James. Parallel Programs in Reading and Arithmetic. Detroit Educational Bulletin, No. 12, pp. 8-11, June, 1927.

²⁶ Worlton, J. T. Effect of Homogeneous Classification on the Scholastic Achievement of Bright Pupils. Elementary School Journal, 28: 336, January, 1928.

⁸¹ Tharp, James Burton. How Shall We Section Foreign Language Classes? Modern Language Journal, 13: 423-449, March, 1920.

[&]quot; Billett, Roy O., op. cit.

W Rankin, Paul T. Evaluation of Ability Grouping in the Seventh Grade. Unpublished study in files of Department of Research, Detroit Public Schools. Summarized in Review of Educational Research, 1: 223-225, June, 1931.

Martin's, and Rankin's studies. Mathematics (including geometry, algebra, and arithmetic) appears six times; French, once; and general science, twice.

Table 3.—Summary of eight controlled studies of homogeneous grouping

Investi- gator	Date of publication (P) or thesis (T)	Subject matter involved	Number of tests used to measure results	Grades investigated	Number of experi- mental pupils	Number of experi- mental classes	Ability levels studied	Length in semesters of experimental period
1	2	-3	4	8		7	8	,
Cook	1924 (P)	English IX English X History Geometry	13		(2)	16	Slow, fast	1
Purdom	1925 (T)	English	4	9	221	15	Slow, average,	1
Baird	1927 (P)	Reading	1		325	10		1
Martin	1927 (T)	Major subjects of sev- enth-grade junior high school.	12	7	90	4 8	Slow, average,	2
Worlton	1928 (P)	Reading Spelling Mixed fundamentals	1	4-7	714	21	Fast	(7)
Tharp	1929 (P)	French	•i	13-14	230	8	Slow, average,	1
Billett	111111111111		5-14	9	521	21	Slow, average,	10 2
Rankin	1931 (P)	English; arithmetic; gen- eral science; social science.	11 7	7	730	13 27	Slow, average, fast.	1

Grades.—Pupils of grades 7 and 9 have been studied most frequently, the former appearing four times and the latter three times. Pupils of the following secondary grades are included each once: Grades 8, 10, 13, and 14.

Number of experimental pupils.—The number of experimental pupils for whom complete data are returned varies from 90 to 730. Mere numbers, however, do not insure

Informal examinations prepared by the teachers.

Total experimental and control pupils given as 495.

Only slow and fast groups in 2 schools.

2 standardized and numerous informal, objective tests.

In each of the 5 major subjects.

Each experimental class had "an average score of 109 or above on the intelligence test."

This study did not deal with equated groups measured at the beginning and end of an experimental period.

Plus teachers' marks.

⁵ tests in Experiment One; 10 tests in each of Experiments Two and Three; 18 tests in each of Experiments Four and Five; 14 tests in each of Experiments Six and Seven.

¹⁰ In 6 of the 7 experiments. In 2 experiments, 1 semester.

11 It test in reading; 1 in spelling; 2 in English; 1 in social science; 2 in arithmetic.

12 In each of the following subjects: Arithmetic, English, general science, and social science.

greater certainty concerning the reliability and importance of the results unless other conditions are satisfactory. Martin's study, which included the smallest number of experimental pupils, was exceedingly well planned, conducted, and controlled. For this reason his results merit consideration much beyond that which would be accorded to loosely planned, conducted, or controlled experiments involving much larger numbers of pupils.

Number of experimental classes and ability levels which they represented.—The number of experimental classes included in these controlled studies varied from 8 to 27. The typical study has investigated the effect of grouping on three different levels of ability. One study investigated but two levels. In another study but a single level was investigated.

Bases of grouping.—Bases of grouping used in these experimental studies have been relatively simple. In five of the studies groups were formed on a single basis. In two studies two bases were used; in one study three bases were used. Scores from group mental tests appear four times; teachers' judgment, based on objective data, twice; the higher of two intelligence quotients, once; teachers' marks, once; educational age, once; the higher of two intelligence quotients combined by the standard deviation technique with teachers' ratings of accomplishment, once; chronological age, once.

With specific reference to the individual investigations it may be said that Cook used, as a basis for his grouping, the scores from a group mental test in the ninth grade, and teachers' marks in the tenth grade. Purdom used the scores from a group mental test. Baird used educational age derived from scores on the Stanford Achievement Test. Martin used the scores from a group mental test and teachers' marks. Worlton grouped his pupils on the basis of teachers' judgment. The pupils were "selected because, in the judgment of the teacher (aided by objective data), they have similar educational needs and abilities." ** Tharp used as a basis of grouping foreign-language aptitude tests supplemented by teachers' judgment. Billett used the higher of two intelligence quo-



Werlton, J. T. Effect of Homogeneous Classification on the Scholastic Achievement of Bright Pupils. Elementary School Journal, 28: 336-345, January, 1928.

tients from a group mental test. He also used teachers' ratings of accomplishment in the second of the seven experiments comprising his investigation. Rankin formed his groups on the basis of chronological age, teacher's estimate, and intelligence-test rating.

Length of experimental period.—The typical length of the experimental period has been but one semester. In only two controlled investigations has the experimental period extended throughout an entire year. In future studies it would seem advisable, if carefully planned investigations could receive adequate support, to extend the experimental period

much beyond one year.

Measurement of results.-In most of the investigations the batteries of tests used to measure results have been scant samplings of the educative changes which presumably have taken place in the experimental and control pupils during the period of the experiment. Of course, no existing tests measure certain expected outcomes of education, such as modified attitudes, habits, concepts, or ideals, in any satisfactory degree. Nevertheless, the importance which should be assigned to the findings of any investigation is conditioned by the completeness with which the batteries of tests used actually sampled all fields where measurable results might be expected. Considerable risk is involved in drawing conclusions from a small number of tests.29 In the fourth experiment which Billett conducted a perfect case might be established for the homogeneous grouping of slow pupils if the results of the following tests, and only the following, were considered: Inglis Vocabulary, Kirby Principles, Kirby Sentences, Pressey Punctuation, Lady of the Lake, and the Sketch Book. However, in the same experiment, a perfect case might be established for the heterogeneous grouping of slow pupils if the following tests and only the following had been used: Pressey Capitalization, Pressey Sentence Structure, Van Wagenen Reading, The Paragraph, Letter Writing, Merchant of Venice, and The Odyssey. Obviously either of the above partial batteries of tests is large when compared with the number of tests generally used in experimental

[&]quot; Billett, Roy O., op. cit., pp. 115-116.

studies. "Yet the use of all 13 tests instead of either of the partial batteries shows that in place of an overwhelming advantage for either type of grouping for slow pupils in the fourth experiment there is probably a slight advantage for the heterogeneous grouping of slow pupils. Although measurement of results of experimental procedures in education today is limited largely to facts, information, and skills, yet even these objectives may be inadequately measured unless longer tests or more extensive batteries of tests than those now commonly being used, are provided."

Each study is unique.—The importance to be attached to the findings of each investigation, in comparative studies, is conditioned not only by the adequacy of measurement. Attention needs to be called to the prevalent indiscriminating tendency to quote findings in a comparative manner approvingly or disapprovingly and without due regard to the degree of control exercised by the several investigators over extraneous factors which may produce an apparent but spurious increase or decrease in the effect of the experimental factor. Even in analytical reviews the findings of several controlled studies, regardless of their disparity, are frequently compared as if their experimental "set-ups" were so nearly identical that similar findings should be expected. Inevitably the findings do not coincide and the reviewer concludes that they conflict with each other. A little reflection will show, even from the briefly summarized data here presented (Table 3) that no two of these investigations are analogous or coextensive, much less sufficiently similar to justify any expected identity of results.

An attempt to exhaust the list of variables would lapse into too great detail. For example, degree of control, which is not mentioned in Table 3, is dependent upon answers to such questions as the following: Was the method of gains used? Were experimental classes completely homogeneous with respect to the grouping criterion? Was the grouping criterion objective? Were experimental and control groups taught by the same or equated teachers? To what extent were such extraneous factors controlled as size of class, classroom environment including heat, light, venti-

[81]

[&]quot; Billett, Roy O., op. cit., p. 116,

lation, and freedom from external distractions, and period

at which experimental and control classes met?

Evaluation a stupendous task.—Even casual reference to a few of the numerous variables not only renders absurd the expectation that the findings of any two of the summarized investigations should coincide but also points clearly to the enormous labor entailed upon investigators before adequate evaluation of grouping can be made giving due weight to the many factors which merit consideration.

Findings of the several investigations.—Briefly stated, Cook found that in geometry, ninth-grade English, and tenth-grade English, homogeneous grouping seemed to benefit the slow pupils. In history, homogeneous grouping

seemed to benefit the superior pupils.

Purdom found no difference between the experimental and control groups. Either type of grouping, homogenous

or heterogeneous, seemed to yield similar results.

Baird discovered that grouping on the basis of educational age was detrimental to the pupils' progress. Eight of his ten experimental groups were surpassed by the control groups.

Martin's results indicate that homogeneous grouping benefits the slow and the fast pupils but is of negative value to average pupils.

Worlton's results show a slight advantage for above-

average pupils when in homogeneous groups.

Tharp's results indicate an advantage for the homogeneous

grouping of slow, average, and fast pupils.

Billett's data show that the results obtained from the homogeneous grouping of pupils varies with different teachers. The composite results of all seven experiments indicate that homogeneous grouping benefits only the slow pupils. The first three experiments conducted by Billett suggest that the advantages of homogeneous grouping decrease as the pupils' intelligence quotients increase.³¹

Rankin found that slow and average pupils did better in homogeneous groups but fast pupils did better in heterogeneous groups. He found no consistent differences in

subjects.

M Billett, Roy 0., op. cit., pp. 80-82.

Only in Purdom's study were neutral results obtained. Concerning this study, Rankin quotes W. W. Coxe to the effect that "if initial accomplishment of the groups compared is considered, the evidence really favors homogeneous grouping." 32 Baird's study shows clearly how unpromising educational age (and hence probably scores on educational tests) seems to be as a basis for homogeneous grouping. Cook's, Martin's, Tharp's, Billett's, and Rankin's studies show advantages for the homogeneous grouping of slow pupils on the various bases used, namely, scores from a group mental test, teachers' marks, aptitude tests, the higher of two intelligence quotients derived from a group mental test, and intelligence-test rating plus teacher estimate and chronological age. Worlton's study was not planned to furnish data for slow pupils. Evidence in the various studies concerning the effect of grouping upon average and bright pupils is much more conflicting than the evidence concerning slow pupils.

5. SUMMARY OF THE OHIO AND DETROIT EXPERIMENTS

Results of the Ohio experiments.—The results of the Ohio 33 experiments are summarized in Figures 1 and 2, Part I. It may be well to state what the data of Figure 1 are and are not. These data are in terms of standard deviations and not in terms of raw scores. They are in terms of the difference of the mean gains of the equated groups and not in terms of gains made by individual groups. They, therefore, indicate the amount of advantage which one type of grouping had over the other type of grouping for each ability level in each experiment. If the advantage in any given case is in favor of homogeneous grouping the bar is constructed to the right of the zero line to show the amount of the advantage. Similarly a bar to the left of the zero line in any given case indicates the amount of advantage for heterogeneous grouping. Also it should be stated that the bars of Figure 1, Part I, indicate the average advantage per test not the total advantage indicated by the entire battery. This average advantage is shown in percentages of one standard deviation. In other words, the unit

Billett, Boy O., op. cit., pp. 110-113.

Example 1 Review of Educational Research, 1: 219, June, 1931.

for Figure 1, Part I, is $\Sigma\left(\frac{M_1-M_2}{\sigma_r}\right)+N$, where N stands for the number of tests in the battery used to measure the results of a given experiment. The use of this unit makes the results of each of the seven experiments directly comparable with the results of the other experiments despite the fact that different tests and varying numbers of tests composed the batteries used in the different units of the entire investigation. It does not compensate for the fact that the experimental or learning periods of Experiments Six and Seven were only about half as long as the experimental periods of the other experiments. If one assumes that the amounts of advantage are directly proportional to the lengths of the learning periods then the amounts of advantage shown in Figure 1, Part I, for

the various ability levels in Experiments Six and Seven should

be doubled.

This method of summarizing results indicates first, that homogeneous grouping has proved of marked advantage to slow pupils in five of the seven experiments. In the remaining two experiments homogeneous grouping was at a slight disadvantage. Second, heterogeneous grouping has proved superior for average pupils in four of the seven experiments. An overwhelming advantage for the heterogeneous grouping of average pupils is shown in the results of the fourth experiment. Third, heterogeneous grouping has proved superior for fast pupils in four of the seven experiments. However, a rather marked advantage for the homogeneous grouping of fast pupils is indicated by the results of the seventh experiment.

The second method of summarizing the results is illustrated by Figure 2. The composite results graphed in Figure 2 were obtained by the algebraic addition of the advantages of the two types of grouping already presented in Figure 1, Part I, but using only the results of Experiments Three, Four, Five, Six, and Seven. The omission of Experiments One and Two prevents the overweighting of the composite results which probably would occur if the very similar results obtained by the one teacher who conducted the classes in the first three experiments were all included. This method of summarizing the investigation shows a marked advantage

for the homogeneous grouping of slow pupils, a marked disadvantage for the homogeneous grouping of average pupils, and some disadvantage for the homogeneous grouping of fast pupils. The general trends of both summarizations are the same, but the second method intensifies the apparent disadvantage of homogeneous grouping for average pupils.

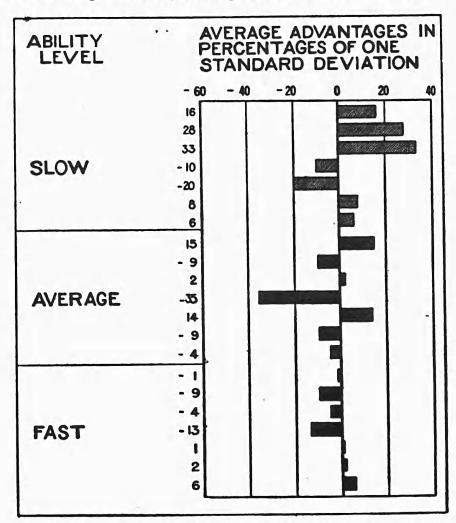


Figure 1.—The average advantage per test, in terms of standard deviations, for each ability level in each of the seven experiments conducted in Ohio

Results of the Detroit experiments.—Rankin ³⁴ measured his experimental and control groups at the beginning and at the end of the experimental period with seven tests, namely, Detroit Reading Test 4, Spelling Test, Capitalization and

M Rankin, Paul T., op. dt., p. 226.

Punctuation Test, Grammatical Forms Test, 7 B Social Science Test, Mixed Fundamentals Test, and 7 B Mathematics Test.

The mean gains were computed and subtracted. The differences of the mean gains of the respective groups on the

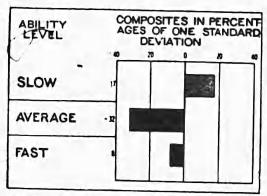


FIGURE 2.—The composite result in standard deviations of Ohio Experiments 3, 4, 5, 6, and 7

various tests were computed and these differences were then divided bv their respective standard errors to get the critical ratios. The average of these seven critical ratios for each ability level is presented in Figure 3. They suggest a disadvantage for the homogeneous grouping of fast pupils

and an advantage for the homogeneous grouping of slow and average pupils.

Although Rankin's and Billett's methods of summarizing their experiments are decidedly different, the results obtained by both investigators have much in common.

Composite of the first and third Ohio experiments.—If the results of the first and third experiments conducted by Billett are combined (Fig. 4) the composite picture suggests a progressive decrease in the advantages of homogeneous grouping as the intelligence quotients

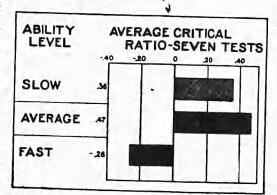


FIGURE 3.—Results obtained in Detroit study, expressed in average critical ratios

of the pupils increase. Slow pupils benefit much by homogeneous grouping, average pupils some, bright pupils not at all.

The following are possible explanations: First, the weight of evidence indicates that bright pupils usurp most of the activity of the heterogeneous class; second, intelligence is

defined ³⁵ as the power to make adaptations for the purpose of attaining a desired end. Homogeneous grouping is an adaptation made for the pupil. The greater the pupil's power to direct his own efforts, to make his own adaptations necessary for attaining his goal, and to criticize his own efforts, the less likely he is to profit by adaptations made for him.

Possible uses of controlled studies in this report.—This brief review of controlled studies of homogeneous grouping should serve a useful purpose later in this report in the interpretation of practice. It should also serve to show that the era

of grubbing for facts in this and related fields has only begun.

6. CONTRIBUTION OF THE PRESENT SURVEY

Both theory and science must be referred to practice. In the process, theory should orient itself, science should recast its procedures and modify its techniques, and prac-

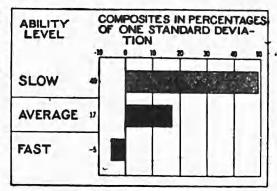


FIGURE 4.—Composite of the average advantages per test, in terms of standard deviations, which one type of grouping showed over the other for each ability level in the first and third Ohio experiments

tice should improve. No adequate picture of the practice of homogeneous or ability grouping has hitherto been available. Therefore, the staff member assigned to this project has endeavored to report accurately what the secondary schools of the United States are doing under the name of homogeneous or ability grouping, as a first duty and perhaps as the most useful service which could be rendered. In the chapters which follow, an effort is made to portray the practice of homogeneous grouping in the United States, first, in broad outlines for all secondary schools; next, in minute detail for a highly selected group of schools which, because of the manner of selecting them, may be presented as typical of the best practice in homogeneous grouping. Practice is studied

[&]quot; For further discussion see Billett, Roy O., op. cit., pp. 80-81.

Dewey, John. Sources of a Science of Education. New York, Horace Liveright, 1929, pp. 28-36, 76, 77.

in the light of available theoretical and scientific criteria. As a result, thinking about homogeneous grouping should be clarified, suggestions should be available for the improvement of practice in many schools, and points of departure for further scientific study should be indicated.

In Chapter II, Part I, the broad outlines of the practice of homogeneous grouping are indicated for the entire United States. This includes a study of secondary schools which are using homogeneous grouping and the estimates of their responsible heads as to the degree of success of the plan. The data are organized to show similarities and differences prevailing in the various States and geographical areas, in schools of different total enrollments and in schools of different types according to grades included. The extent to which homogeneous grouping is combined with other provisions for individual differences is shown. Partly by the use of the preceding data the procedure for selecting a group of schools for intensive study because of the excellence of their practices is indicated.

In Chapter III, Part I, the exact extent of use of homogenous or ability grouping is shown for the selected group of schools. Individual subjects are ranked according to the percentage of classes which are organized into homogeneous groups. A similar ranking is made for the various subject-matter fields. Comparisons are made to bring out significant differences and similarities. The data are organized to show the effect of total enrollment, and of type of school organization as shown by grades included, upon the percentage of classes which are grouped in the various subject-matter fields. The effect of grade-placement of subjects upon the amount of grouping is shown. Extent of grouping is also studied with reference to the number of ability levels provided.

The bases or criteria used in forming homogeneous groups are the main consideration of Chapter IV, Part I. All bases of grouping in use in the 289 selected schools are ranked in the order of the extent to which they are employed. Comparisons are made of the extent of use of each basis in the various subject-matter fields in schools grouped according to total enrollment and again according to type of organization as shown by

grades included. Where several bases are used for grouping, the method of combining them to secure a composite basis is studied. Such questions as the following are answered: Are all bases reduced to mathematical terms for a given pupil? Are mathematical formulæ used for grouping? Are some data stated numerically and other data merely "taken into consideration" when a pupil is assigned to a homogeneous group? What combinations of bases are most frequently used? What weight is typically assigned each component basis? To what extent do schools use a single basis of grouping?

In Chapter V, Part I, numerous miscellaneous features of grouping procedure are studied. In small schools, or in elective subjects where there are only enough pupils for one class section, to what extent is grouping practiced within the class section? Are there any carefully developed teaching procedures for such class sections? Do schools with outstanding practices in ability grouping have carefully worked-out courses or curriculums for each ability level? If so, in what fields? what extent have teaching procedures been modified for each ability level? To what extent are plans, methods, or techniques such as the Dalton plan, Morrison plan, Winnetka technique, or problem method being used as a part of this modified teaching procedure? Who does the grouping for the school? Do administrative and scheduling difficulties prevent complete homogeneity with respect to the grouping criterion? How frequently are schools reorganized into new ability levels? To what extent are pupils transferred from one ability level to another during the semester and what are the chief reasons for these transfers? What modification of class size is made for different ability levels?

In Chapter VI, Part I, specific practices of individual schools are summarized. The practices cited are selected with reference to their value in illustrating the findings set forth in the preceding chapters.

CHAPTER II: AN OVERVIEW OF HOMOGENEOUS GROUPING

1. GEOGRAPHICAL CONSIDERATIONS

Geographical distribution of schools using homogeneous grouping.—One or more secondary schools from every State in the Union reported the practice of homogeneous or ability grouping. (Fig. 5.) The number varies from 1 school in Nevada, 5 in Delaware, 7 in New Mexico, 12 in Rhode Island, 14 in Wyoming, 16 each in Arizona and South Dakota, and 17 each in Montana, Idaho, and South Carolina, to 166 in New York, 180 in Ohio, 210 in California, and 234 in Pennsylvania.

The ratio of schools using homogeneous grouping to the total number of tabulated replies on the preliminary inquiry varies greatly from State to State. (Fig. 5.) For example, in Nevada only 1 school in 12 reporting on the preliminary form was using homogeneous grouping, as contrasted with 210 schools of 310 reporting from California. Similar ratios

are readily available for the other States.

Ratio of "use" to estimated "use with unusual success".-A relatively small number of the schools using homogeneous grouping regard the plan as meeting with unusual success. (Fig. 5.) However, this ratio of use to estimated use with unusual success varies considerably from State to State. example, in Vermont, of 19 secondary schools using homogeneous grouping, 8 estimate the plan as unusually successful. This is roughly a ratio of 2 to 1. In California, of 210 secondary schools using homogeneous grouping, 64 regard the plan as unusually successful. This is approximately a ratio of 3 to 1. Other similarly derived ratios are: District of Columbia, 4 to 1; Ohio, 5 to 1; New York, 6 to 1; Louisiana, 7 to 1; Arizona, 8 to 1; and Utah, 10 to 1. Corresponding ratios for other States are available from the data of Figure 5. tion of these ratios shows that the typical ratio for the various States of use of homogeneous grouping to estimated use with unusual success is 3 to 1, 14 States falling in this group. The

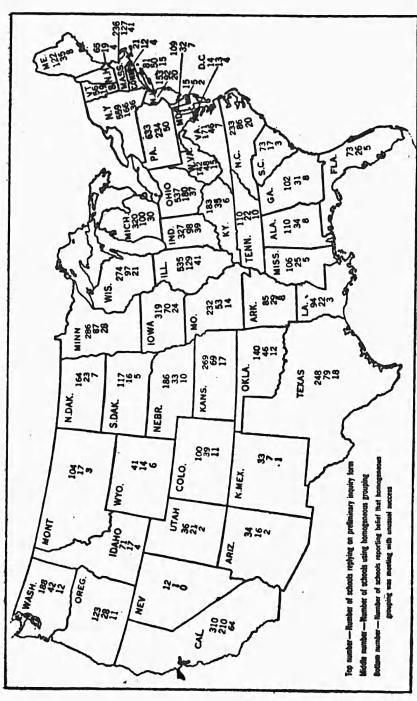


FIGURE 5.—Number of replies on preliminary inquiry from each State; number of schools using homogeneous grouping; number of schools reporting belief that homogeneous grouping was meeting with unusual success

ratios of 37, or three-fourths, of the States range from 3 to 1 to 5 to 1. The maximum ratio is 10 to 1 for Utah. Nevada is the only State where no school estimates homogeneous grouping to be meeting with unusual success.

2. RELATION OF GROUPING TO SIZE OF SCHOOL

Grouping within the class section and into class sections. Homogeneous grouping is usually a process of forming class sections, each of which is fairly homogeneous in one or more These sections may meet in different rooms under different teachers or perhaps under the same teacher at different periods of the school day. Such a process may be called grouping into class sections. However, many schools of all sizes follow a second procedure which, for want of a better term, may be called grouping within the class section. Unless the existence of this second procedure is stressed at this point the data concerning the relation of grouping to total enrollment may be misleading. The procedure is nothing essentially new. Good teachers have employed it more or less informally for a long time. Under the procedure the pupils of a heterogeneous class are divided by the teacher into two or more groups for instructional purposes and the class period is given partly to individual work, partly to work with small groups, and partly to class discussion. The advantages of such a procedure have been discussed elsewhere.1 The purpose here is not to commend or condemn the practice but to call the reader's attention to the fact that the practice not only exists but is regarded by the respondents as homogeneous grouping. Obviously it is the only form which homogeneous grouping can assume in very small schools, or in large schools for that matter, in elective subjects where enough pupils are available for but one class section. The extent to which highly selected schools of all sizes are using grouping within the class section is shown by Figure 18, Chapter III, Part I. The discussion at that point will be anticipated here only to emphasize that homogeneous grouping has come to mean two quite distinct things, namely, grouping into class sections and grouping within the class section. Both practices frequently occur simultaneously in the same

[42]

¹ Billett, Roy O., op. dt., pp. 14-15.

school. The latter practice as yet is less in vogue than the former. However, some schools of all sizes are using it as a supplement to such grouping into class sections as they find possible or desirable. The following data should be interpreted with the preceding facts in mind.

Homogeneous grouping in schools of various enrollment groups.—Of 2,740 secondary schools reporting the use of homogeneous grouping (Column 2, Table 4), 118 had enrollments of 50 or fewer. This is not an impressive figure when it is recalled that these 118 schools constitute but 8 per cent of the schools, of total enrollment 50 or fewer, which returned the preliminary inquiry form, and that more than 5,000 of the public secondary schools of the United States have enrollments of 50 or fewer. However, it is interesting to know the extent to which very small schools are experimenting with grouping within the class section. The percentages for the larger schools contrast strikingly with the 8 per cent of schools in the total-enrollment group 50 or fewer, and the 11 per cent of schools in the total-enrollment group 51 to 100, which are using homogeneous grouping. For instance, 72 per cent (Column 3, Table 4) of all schools of total enrollment 751 to 1,000 replying to the preliminary inquiry, and 76 per cent of all schools of more than 1,000, are using homogeneous grouping.

TABLE 4.—Numbers and percentages of schools of different total enrollments reporting use of homogeneous grouping and use with unusual success

	In	use	In use to usual s	Column 5 divided by col-		
Enrollment group	Number of schools	Per cent	Number of schools	Per cent	umn 3, expressed in per- centages	
1	2				•	
50 or fewer	118 217 628 622 379 219 557	8 11 26 55 68 72 76	16 24 146 178 105 66 178	1 2 6 16 19 22 51	12 18 23 29 28 31 67	
Total	2, 740	31	721	8	26	

Comparing the seven total-enrollment groups with respect to the extent to which use is being made of homogeneous grouping (Column 3, Table 4, and Fig. 6) one perceives that the greatest increases between class intervals are 15 per cent between total-enrollment groups 51 to 100 and 101 to 250, 29 per cent between total-enrollment groups 101 to 250 and 251 to 500, and 13 per cent between total-enrollment groups 251 to 500 and 501 to 750. The next two increases are but 4 per cent each.

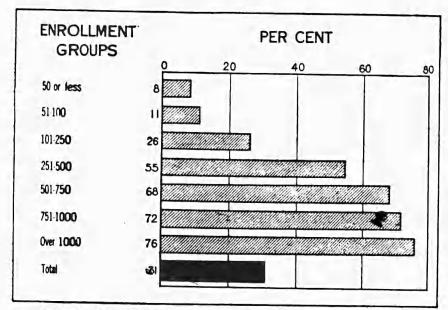


FIGURE 6.—Use of homogeneous grouping in schools of different total enrollments

Estimated unusual success in schools of different sizes.—The estimated extent to which homogeneous grouping is meeting with unusual success in schools of different total enrollments presents a different picture. (Column 5, Table 4, and Fig. 7.) An increase is shown from each total-enrollment group to the next higher. But marked increases occur from total-enrollment group 101 to 250 to total-enrollment group 251 to 500 (10 per cent) and from total-enrollment group 751 to 1,000 to total-enrollment group of more than 1,000 (29 per cent). The figures suggest that homogeneous grouping is achieved with relative ease in schools enrolling more than 1,000 pupils. When the total enrollment drops to fewer than 1,000 there is a sharp decline in the facility with which

success is being achieved. This decline continues at a greatly lessened pace until total enrollments of 250 or fewer are reached. Here the decrease becomes more abrupt (Fig. 7) indicating less and less ease with which success may be realized.

The obvious tendency for the use of homogeneous grouping—or its use with estimated unusual success—to increase as the total enrollment increases suggests that grouping into class sections is the dominant practice. Otherwise, it would be hard to explain the marked positive relationship between increased use of grouping and increased size of school, since

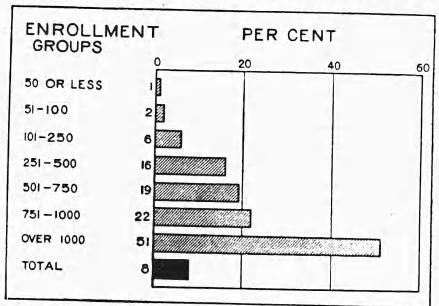


FIGURE 7.—Use of homogeneous grouping with estimated unusual success in schools of different total enrollments

grouping within the class section may be practiced in schools of any size.

Similar conclusions are indicated when the ratios of use with unusual success to total use are considered. (Column 6, Table 4, and Fig. 8.)

S. RELATION OF GROUPING TO TYPE OF ORGANIZATION

Homogeneous grouping in schools of different types according to grades included.—More than a third of the 2,740 secondary schools reporting the use of homogeneous grouping were unreorganized 4-year high schools including grades 9 to 12. (Column 2, Table 5.) In the main this is indicative only of

the fact that secondary schools including grades 9 to 12, are more numerous than any other type. Very nearly a sixth of the schools reporting the use of homogeneous grouping were the reorganized junior high schools including grades 7 to 9. Only a slightly smaller proportion of reorganized, 6-year junior-senior high schools were using homogeneous

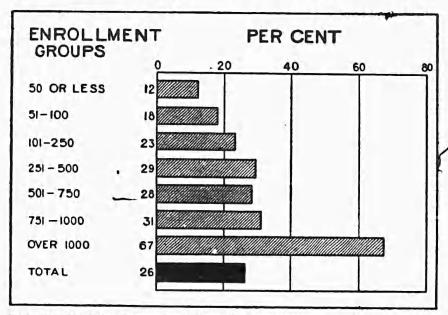


FIGURE 8.—The ratios, in percentages, of use of homogeneous grouping with unusual success
to use in school: of different total enrollments

grouping. About a seventh of the schools reporting the use of homogeneous grouping constituted a miscellaneous "All others" group with atypical grade combinations. These include a group of schools vitally affected by the reorganization movement but variant with respect to grades included because of building or other local conditions. Relatively small proportions of the schools using homogeneous grouping were of the types including grades 8 to 11, grades 10 to 12, or grades 6 to 11. The frequencies for all types of schools are of course affected both by the number of each type of school actually in existence and by the tendency which the type may possess in greater or less degree to make use of homogeneous grouping.



³ Secondary schools classed as "reorganized" in this study are those secondary schools including grades 7 to 9, 7 to 12, 10 to 12, or 6 to 11, as contrasted with schools having the traditional organization including grades 8 to 11 or 9 to 12.

TABLE 5.—Numbers and percentages of schools, classified according to type of organization, reporting use of homogeneous grouping and use with unusual success

	In	0.96	In use v	Column 8 divided by col-		
Type of organization	Number of schools	Per cent	Number of schools	Per cent	umn 3, expressed in per- centages	
1		1	4	5		
7 to 9 7 to 12 10 to 12 9 to 12 6 to 11 8 to 11 All others (miscellaneous)	496 461 153 1, 029 26 172 403	80 39 65 24 25 27 28	168 123 37 246 5 38 104	26 11 13 6 5 6	28 28 24 25 20 22 32	
Total	2, 740	31	721	8	26	

Tendencies characteristic of types of schools are better revealed by inspection of the percentages of use of homogeneous grouping than by reference to gross frequencies. Of all types, schools including grades 7 to 9 report most use of homogeneous grouping, four in each five such schools reporting its use. (Fig. 9.) This is a marked lead over the nearest other type, namely, schools including grades 10 to 12. In these latter schools slightly more than half report the use of homogeneous grouping. Other types in the order of the extent to which they employ homogeneous grouping are: Grades 7 to 12, the miscellaneous "All others" group, grades 8 to 11, grades 6 to 11, and grades 9 to 12. It is noteworthy that, while 1,029 schools including grades 9 to 12 are using homogeneous grouping, these comprise only 24 per cent of the total number of schools of this type which returned the preliminary inquiry form.

The percentage of use with estimated unusual success.—In proportion of use with estimated unusual success, schools including grades 7 to 9 also far surpass all other types. (Fig. 10.) One of every four such schools (26 per cent) estimates homogeneous grouping to be meeting with unusual success. This contrasts with the fact that of all reorganized 3-year senior high schools of grades 10 to 12 replying to the preliminary inquiry only 6 per cent estimate grouping to be meeting with unusual success. Schools including grades 6 to

11 estimate unusual success in 6 per cent of the cases; grades 8 to 11, 5 per cent; grades 7 to 12, 11 per cent; and grades 9 to 12, 13 per cent. All these percentages are based upon the total number of schools replying to the preliminary inquiry.

The ratio of estimated "use with unusual success" to use.—If the ratio of estimated use with unusual success to use is considered, the differences among types are not great. Schools of grades 7 to 9 still lead with a ratio of 32 per cent. (Fig. 11.) This means that about one in each three schools of grades 7 to 9 using homogeneous grouping regard it as unusually

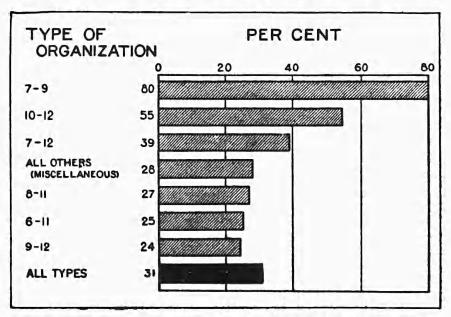


FIGURE 9.—The percentage of use of homogeneous grouping in schools classified according to grades included

successful. A similar statement holds for the miscellaneous "All others" group. The ratios for the other types of schools range from 20 per cent for schools including grades 6 to 11 to 28 per cent for schools including grades 7 to 12. Of all schools using homogeneous grouping, the ratio of use with estimated unusual success to use is lowest for schools including grades 6 to 11.



On the whole, therefore, schools of all types have been conservative in estimating unusual success. A much larger

percentage of the reorganized schools are using homogeneous grouping but only schools of grades 7 to 9 and of grades 7 to

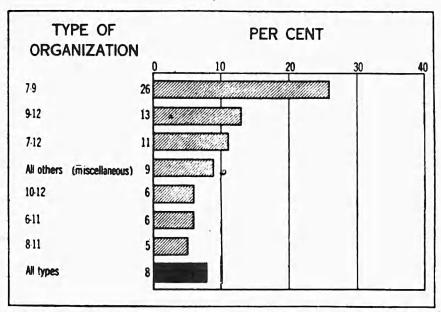


FIGURE 10.—Use of homogeneous grouping with estimated unusual success in schools classified according to grades included

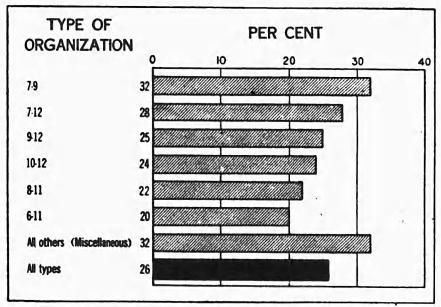


FIGURE 11.—The ratio of use of homogeneous grouping with unusual success to use in schools of different types of organization

12 exceed schools of grades 9 to 12 in the ratio of estimated unusual success to use. (Fig. 11.)

4. OTHER PROVISIONS FOR INDIVIDUAL DIFFERENCES

Frequency of other provisions.—The 721 schools (Column 4, Table 5) which estimated homogeneous grouping to be meeting with unusual success also reported, on the average, 1.5 other provisions for individual differences to be meeting with unusual success. (Table 6.) The total frequency of such miscellaneous provisions was 1,091.

TABLE 6.—Frequency with which homogeneous grouping was reported in 721 schools to be operating with unusual success in combination with other provisions for individual differences which were also meeting with unusual success

4	with unusual costs of the costs	quency n which sual suc- in homo- neous ping was mpanied unusual seess in ser pro- sions
1.	Problem method	68
	Project curriculum	47
	Promotions more frequently than each semester	23
4.	Special coaching of slow pupils	125
5.	Special coaching to enable capable pupils to skip a grade or	
	half grade	21
6.	Special classes for pupils who have failed	82
7.	Opportunity rooms for slow pupils	68
8.	Opportunity rooms for gifted pupils	28
9.		24
10.		38
11.	Restoration classes	12
12.		52
	Psychological studies.	28
14.	Differentiated assignments to pupils in same class section	178
15	Long-unit assignments.	61
16	Winnetka technique	3
	Individual instruction	65
18.	Contract plan	71
19.	Laboratory plan of instruction	53
	Dalton plan	2
21.	Modified Dalton plan	8
22.	Morrison plan	39
	Total	1, 091
	Average number of provisions (in addition to homogeneous	15.746.77
	grouping) per school	1. 5
	[KO]	



Other provisions classified.—These provisions are not so diverse as they may at first appear. One may assume an important common element, namely, the unit assignment, to characterize provisions 1, 2, 14, 15, 16, 17, 18, 19, 20, 21, and 22. (Table 6.)3 The total frequency with which these combined provisions appear as unusually successful in combination with homogeneous grouping is 595. (Table 7.) Similarly it may be assumed that provisions 3, 4, 6, 7, 9, 10, and 11 may be classed in a common category as provisions primarily for slow or failing pupils. These when combined total 344, or nearly one-third of the aggregate frequencies. (Table 7.) To this sum might well be added provisions 12 and 13 (Table 6) which have to do primarily with slow, failing, or otherwise maladjusted pupils. Provisions 5 and 8 which have to do with the very capable or gifted amount to but 49, or 5 per cent, of the aggregate frequencies.

TABLE 7.—Frequency of use with unusual success of 22 provisions for individual differences classified under common headings

Provisions grouped 1	Common characteristic	Frequency of use by schools using homogene- ous group- ing with unusual success	Per cent of use by schools using homogeneous group- ing with unusual success	
i		7	4	
1, 2, 14, 15, 16, 17, 18, 19, 20, 21, 22.	Unit assignment Promotions more frequently	595 23	83	
4, 6, 7, 9, 10, 11	than each semester. Special classes or rooms for slow	344	48	
5, 8	or failing pupils. Special classes or rooms for gifted. Provisions primarily for malad- justed.	. 49 80	7 11	

¹ See Table 6, Column 1.

The facts given above may be stated in another way. Of all schools reporting the use of homogeneous grouping with

See Pt. II.

unusual success the following percentages are also using with unusual success the provisions indicated below (Table 7):

(1)		Per cent
(3)	Scientific studies of problem cases and psychological studies.	48
(4)	Special classes for the capable or gifted.	11
(5)	Promotions more frequently than each semester	7
	- Industry than each semester	2

These data do not necessarily indicate that the capable pupils are being neglected. Possibly they are quite able to care for themselves under a system of homogeneous grouping with generous use of the unit assignment and unhampered by the slow or incapable who are specially provided for.

5. SELECTING A SMALL GROUP OF SCHOOLS FOR DETAILED AND INTENSIVE STUDY

Source of this small group.—The aim in the treatment of the chapter up to this point has been to sketch the broad outlines of the practice of homogeneous grouping in the United States. For more detailed study a comparatively small group of schools was selected, in which one might expect the present status of best practice to be reflected because in them earnest and relatively successful efforts at homogeneous grouping are being made. This small group of schools was chosen from two promising sources: (1) The 721 schools, the representatives of which had expressed a measure of confidence in their programs for homogeneous grouping, and (2) a group of schools recommended by informed persons unconnected with the individual schools represented. Seven hundred and fortyone schools were selected from the two sources.

The follow-up form.—To these 741 schools a 23-page follow-up inquiry form was addressed. This form was carefully constructed to furnish as accurate a picture of each school's practices in connection with homogeneous grouping as could be obtained prior to visiting the school. Respondents when reporting on this follow-up form were aware that their replies would be the basis of selection of certain schools to be visited and studied at first-hand.

Returns on the follow-up inquiry form.—The follow-up form was returned carefully filled out by 336 schools, or by 44 per cent of the schools receiving it. Several other schools

returned the form blank, that is, without entries of data, candidly stating that their programs for grouping did not measure up to the standards set by the form. After carefully reading the 336 forms, the staff member selected 289 to be included in a study of what might be termed the status of best practice in homogeneous grouping. A sampling of these schools was later visited and studied at first-hand by observation and interview.

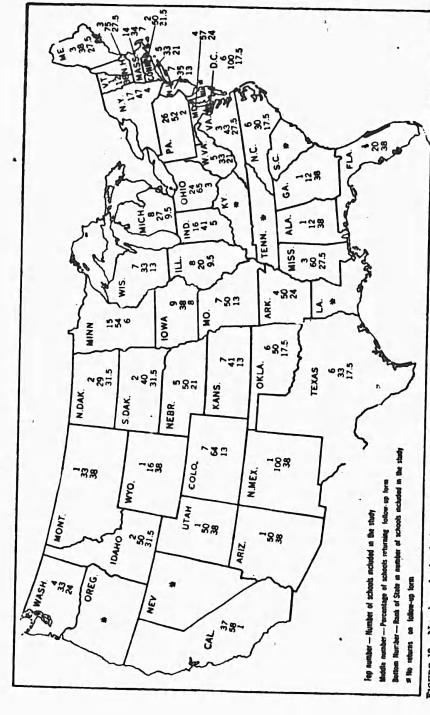
6. SCHOOLS RETURNING THE FOLLOW-UP FORM

Geographical distribution of tabulated replies to the follow-up form.—The median State made 5 returns. California ranks first with 37 usable forms returned. (Fig. 12.) Pennsylvania, Ohio, New York, and Indiana follow in the order named. States from which one usable reply, only, was received are: Alabama, Arizona, Florida, Georgia, Montana, New Mexico, Utah, Vermont, and Wyoming.

The percentage of returns on the follow-up form varies from 0 in 6 States to 58 in California, 60 in Mississippi, 64 in Colorado, 65 in Ohio, 75 in New Hampshire, and 100 in the

District of Columbia. (Fig. 12.)

Relation of returns from the various States on the follow-up form to the percentage of estimated unusual success with grouping as given on the preliminary form.—It has been pointed out already that groups of schools from the several States differed considerably in the percentage of estimated unusual success with homogeneous grouping. The ratio of use to use with unusual success ranged from 2 to 1 to 10 to 1, and the schools from one State reported no unusual success. It is an interesting fact that from those States where the ratio of use of homogeneous grouping to use with unusual success was 2 to 1 (Fig. 13), only 9 per cent, or about 1 in each 10 schools, returned copies of the long, follow-up form of sufficient merit to warrant their inclusion in the tabulations. But from those States where the ratio of use to use with estimated unusual success was 8 or 10 to 1, 50 per cent of the schools receiving the follow-up form returned copies which were worth including in the tabulations. Moreover, the percentage of usable forms regularly increases from 9 to 50 per cent, with increase in the ratio of use to use with



Flours 12.—Number of schools from each State included in intensive study of homogeneous grouping; percentage of schools in each State returning the follow-up form; and the rank of the State in terms of number of schools included in the study

estimated unusual success. (Fig. 13.) The only exception occurs for the ratio 6 to 1. These data suggest that long, follow-up forms tend to cause respondents to reformulate their standards of what constitutes unusual success. For example, the presumption is not far-fetched that the group of schools, wherein 1 in each 2 was estimated to be using homogeneous grouping with unusual success, was employing more lenient standards of what constitutes success, than the group of schools wherein only 1 in each 10 was estimated to be using homogeneous grouping with unusual success. is no accident that from the former group of schools only 1 school in 10, estimated to be using homogeneous grouping with unusual success actually furnished evidence of that success by returning the long, follow-up form; whereas from the latter group 1 school in each 2 estimated to be using homogeneous grouping with unusual success returned the The net result is that from both groups of schools, regardless of the apparent difference in the original leniency or severity of standards of unusual success, exactly the same percentages of schools using homogeneous grouping were included in the tabulations of best practices. This point has implications from the standpoint of technique which seem to justify further illustration. Suppose a random sampling of 100 schools be taken from the first group. Fifty of these are estimated to be using homogeneous grouping with unusual Therefore, each of these 50 would receive a copy of the follow-up form. But the data show that only 5 of the forms would be returned. However, if a random sampling of 100 schools be taken from the second group then only 10 are estimated to be using homogeneous grouping with unusual Yet of these 10 schools which would receive copies of the follow-up form the data show that 5 schools would return usable copies.

Relation of total enrollment to returns on the follow-up form.—
Although 16 schools of total enrollment 50 or fewer received copies of the follow-up form (Column 4, Table 4) there were no returns from schools of this size. Thirty-four schools of total enrollment 51 to 100 received the form, and 5, or 15 per cent, returned it filled out satisfactorily. The form was returned by 35, or 24 per cent, of schools of total enrollment

101 to 250. (Table 8.) By progressive increments of from 7 to 11 per cent the proportion of returns increased until from schools of total enrollment of more than 1,000, 60 per cent of returns were received. These figures present another

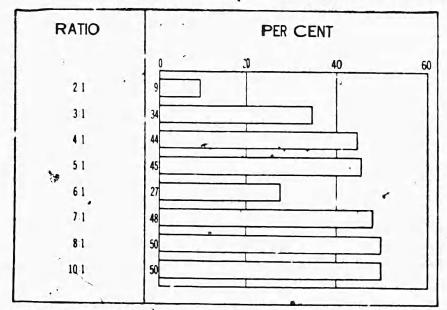


FIGURE 13.—The relation of the percer lages of successful use of homogeneous grouping, as reported on the preliminary inquiry, to percentages of returns of the long follow-up form

line of evidence suggesting that the ease with which homogeneous grouping may be practiced varies directly with the size of the school.

TABLE 8.—Schools reporting on follow-up form on homogeneous grouping, classified according to total enrollment

Enrollment group	Number of replies	Number of replies on follow-up form+ number of schools estimating unusual success with homogeneous grouping on the preliminary form (per cent).	Enrollment group	Number of replies	Number of replies on follow-up form + inumber of schools estimating unusual success with homogeneous grouping on the preliminary form (per cent)
50 or fewer 51 to 100. 101 to 250	0 5 35	0 15 24	751 to 1,000	35 105	53
251 to 500	62 47	7 35 45	Total	289	40

⁴ All figures based on mable returns.

Relation of types of organization to returns on the follow-up form.—The follow-up form was returned in markedly greater percentages by the reorganized schools than by the unreorganized schools. (Table 9.) It was returned by all schools including grades 6 to 11 and by more than half the other reorganized schools, including grades 7 to 9,7 to 12, or 10 to 12, to which it was addressed. On the other hand, the form was returned by only a fourth of the unreorganized schools including grades 9 to 12 and by only an eighth of the schools including grades 8 to 11.

The form was returned by about a third of the miscellaneous "All others" group. Two important facts should be noted concerning this group. First, the grades included in the schools of this group are for the most partithe early grades of the secondary school. For example, the combined frequencies for grades 6, 7, 8, and 9 are 80, as compared with a combined frequency of 31 for grades 10, 11, 12, 13, and 14. Second, these schools are practically all affected by the reorganization movement either at the junior high school or at the junior college level. In many instances these schools have most of the features of reorganized schools but lack the typical number of grades.

Table 9.—Schools reporting on follow-up form on homogeneous grouping, classified according to grades included

Type of organization	Number of replies	Per cent which num- ber of replies on follow-up form is of number re- portiting unu- sual success on prelimi- nary form	Type of organization	Number of replies	Per cent which num- ber of re- plies on fol- low-up form is of num- ber report- ing unusual success on prelimi- nary form
7 to 9	86 72 71	51 58 28	6 to 11All others	5 31	100
10 to 12	19	51 13	Total	289	40

Number and size of grades.—Since grade placement of subject matter assumes considerable importance in the following chapters it is well at this point to indicate the frequency with which each grade occurs in the 289 selected schools. (Table 10.) Excluding grades 6, 13, and 14 because

of small frequencies there are a total of 1,167 grades included in the study of the "Status of best practice" which will be reported in succeeding chapters. The ninth grade occurs most frequently. Median enrollment varies from 89 in the twelfth grade to 196 in the ninth grade. Median enrollments for grades 7, 8, and 9 are approximately equal. There is a distinct drop from grade 9 to grade 10 of 66 pupils. A further large decrease occurs from grade 10 to grade 11. Grades 11 and 12 are approximately equal.

Table 10.—Grade enrollments 1 of schools reporting on follow-up form on homogeneous grouping

Enrollment per grade	Fre	quency (of the var	ious grade	ade enrollments in each					
	7	8	9	10	11	12	Total			
1	2	3	4		6	7	8			
Fewer than 30	14 13 25 24 22 20 48 22	16 15 25 24 25 25 49 18 1	11 26 31 36 27 24 70 25 8	14 28 35 22 13 8 30 20	17 35 40 16 12 12 27 14	24 35 33 17 9 11 22 15	96 152 189 139 108 100 246 114 23			
Total	188	198	258	180	177	166	1. 167			
Median enrollment	191	188	196	130	96	89	153			

¹ Grades 6, 13, and 14 omitted because of small number of such grades.

7. RETURNS ON AN EARLIER INQUIRY

Size of schools replying.—The 1928 inquiry has already been referred to in the opening chapter of this monograph. The returns on this form showed a definite and fairly regular increase of homogeneous grouping with increase in total enrollment, the range extending from 14 per cent for schools of total enrollment 51 to 100 to 66 per cent for schools with enrollments of more than 1,000.

Type of organization of schools replying.—Although the inquiry was addressed only to schools listed as 4-year high schools or senior high schools, a considerable number of recently reorganized schools, including grades 7 to 12 and grades 10 to 12, responded. Sixty-four per cent of schools including grades 7 to 12 were using homogeneous grouping as compared with 53 per cent for grades 10 to 12, and 49 per cent for grades 9 to 12.

8. SUMMARY

From 1 to 234 schools from each State in the Union reported the use of homogeneous grouping. Nearly a fourth of all schools using the plan reported estimated unusual success with it. Homogeneous grouping as practiced in the secondary schools generally implies grouping into class sections. However, in some schools of all sizes the term also means grouping within the class section. The use of homogeneous grouping and its use with estimated unusual success increase as the total enrollment increases. A much larger percentage of reorganized, than of unreorganized, schools is using homogeneous grouping.

Of the 721 schools estimating homogeneous grouping to be meeting with unusual success all were maintaining some special classes and all were experimenting with some form of the unit assignment. Moreover, in the opinion of the principals, unusual success was being obtained by nearly half of these schools with special classes for slow or failing pupils; by nearly a tenth with special classes for the very capable or gifted; and by nearly nine-tenths with some form of the unit assignment.

A small group of schools whose practices in homogeneous grouping were to be studied intensively was selected from two sources: (1) Those schools whose representatives had expressed a measure of confidence in the success of their program of homogeneous grouping, and (2) those schools recommended by informed persons unconnected with the individual schools represented. Seven hundred and forty-one schools selected from the above two sources were approached with a long, follow-up inquiry form dealing with homogeneous grouping. From 336 replies, 289 schools were finally selected to represent the status of best practice in homogeneous grouping. The 289 schools finally selected for intensive study represented 42 States. The 289 schools also included a much greater proportion of large schools than of small, and of reorganized schools than of unreorganized. A sampling of these 289 schools was later visited and studied at first-hand by observation and interview.

CHAPTER III: EXTENT OF HOMOGENEOUS GROUPING IN HIGHLY SELECTED SCHOOLS

1. PRELIMINARY QUESTIONS AND CONSIDERATIONS

Questions to be answered.—The method of selecting a small group of schools to represent best practices in homogeneous grouping was described in Chapter II, Part I. The thoroughness with which these schools carry on homogeneous grouping is probably unmatched by any equal number of other schools anywhere. But such a sweeping statement leaves many vital questions unanswered. In this chapter more careful inquiry will be made into the extent of grouping in these selected schools. Quantitative answers are given to the first six of the following questions:

- 1. What percentage of the total offerings of these selected schools, in all grades and all subject-matter fields, are presented to pupils segregated into homogeneous groups?
- 2. What effect has grade-placement of offerings upon the percentage of classes segregated into homogeneous groups?
- 3. What variations occur in percentages of classes segregated into homogeneous groups in—
- (a) academic, commercial, and other nonacademic subject-matter fields;
 - (b) various individual subject-matter fields; and
 - (c) various individual subjects?
- 4. What further variations are observable in 3 (a), (b), and (c), when the schools are classified according to—
 - (a) total enrollment,
 - (b) grades included, and
 - (c) seventh, ninth, and twelfth grade enrollments?
- 5. What is the relation of grade-placement of subjects in the various subject-matter fields to the number of homogeneous levels provided?
- 6. What is the relation of seventh, ninth, and twelfth grade enrollments to the number of homogeneous levels provided?
- 7. Finally, how do the answers to the preceding questions harmonize with an empirical assumption that purely common-sense considerations of practicability and desirability are the principal determinants of the amount of grouping practiced in specific subject-matter fields, subjects, or grades?

Considerations of practicability and desirability.—Concerning this last question it should be said that considerations of practicability will center around the number of pupils enrolled in specific subjects or grades, since grouping into class sections rather than within class sections is the dominant practice in all except the smallest enrollment groups. On the other hand, considerations of desirability will center around the degree of homogeneity of pupils' abilities, interests, aims, or needs already prevailing in certain subjects and grades without further refinement of classification,

either because the less capable have been eliminated in the lower grades or because courses or curriculums have become highly differentiated.

These questions not preriously answered.—No previous attempt has been made to furnish quantitative answers to the foregoing questions for any group of schools. Yet such quantitative answers seem necessary for intelligent interpretation and criticism of the practices of the best

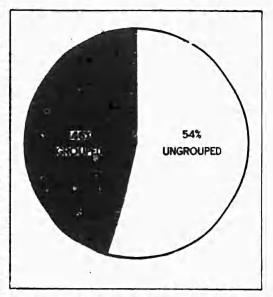


FIGURE 14.—The percentages of grouped and ungrouped classes (all grades and subjects combined) in 289 schools selected for best practices in homogeneous grouping

secondary schools and for the later orientation both of practice and of experimental studies.

2. TOTAL OFFERINGS AND EXTENT OF GROUPING

Proportion of total offerings presented to classes segregated into homogeneous groups.—The first question may be answered by stating that exactly 46 per cent of the total offerings of these 289 schools are presented to classes segregated into homogeneous groups. (Fig. 14.) This percentage was obtained by adding the frequencies with which the various



subjects were offered in each grade to homogeneous groups, and dividing the total by the sum of the frequencies with which the various subjects were offered in each grade to both homogeneous and heterogeneous groups. In more than half the offerings of these schools selected because of the emphasis which they are placing upon homogeneous grouping, no refinement of classification commonly designated as homogeneous grouping is attempted.

Effect of grade placement of offerings upon the proportion of classes segregated into homogeneous groups.—In these selected

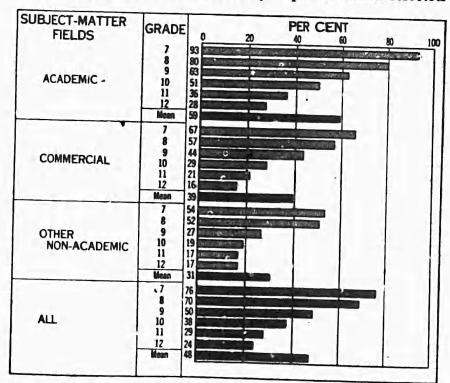


FIGURE 15.—The relative extents of grouping in academic, commercial, and other nonscademic subject-matter fields for all schools by grades

schools more than three-fourths (76 per cent) of the seventh-grade offerings are presented to pupils regregated into homogeneous groups. (Fig. 15 and Column 3, Table 11.) In the eighth grade the corresponding percentage drops to 70, in the ninth grade to 50, in the tenth to 38, in the eleventh to 29, and in the twelfth to 24. The percentage of offerings presented to pupils in homogeneous groups decreases regularly from the lower to the higher grades of the secondary

school. The degree of decrease is as 3:2:1 for grades 7, 9, and 12. (Columns 3, 5, and 8, Table 11.)

TABLE 11.—Extents of homogeneous grouping in each subject-matter field and in each grade of all schools, expressed as percentages

				Grad	в.				es 6 to
Subject-matter field	6	7	8	9	10	11	12	Mean	Aver- age devia- tion
t	2	3	•	5	6	7	8		10
English Foreign language	77	96	91	79	65	51	37	71	17. 0
Mathematics	(1)	88 96	89	48 74	39 58	26 32	22	63	17. 0 21. 4
Social studies	78	92	89	63	52	40	31	64	19. 6
Science		92	80	52	39	29	29	56	21.9
Commercial subjects		67	57	44	29	21	16	39	17.0
Physical education (gymnasium) Physical education (classroom)	60 56	32	46	34	29	25	26	36	9. 7
Music	62	60 55	56	24	23	18	19	37	17. 9
ATL.	56	62	55	23	12	15	15 12	34	18.4
Industrial and household arts	52	62	56	29	15	17	14	33 35	21. 0 18. 6
Mean, academic fields	75	93	80	63	51	36	28	60	19. 4
Mean, nonacademic fields (except com- mercial)	57	54	52	27	19	17	17	35	
Mean, all subject-matter fields	68	76	70	50	38	29	24	51	16.9
Average deviation, academic fields	3.0	20	11.6	10.6	9. 2	8.0	5.0	7. 2	11. 1
Average deviation, nonacademic fields	5.0	9. 0	4.0	3.4	5.0	3.2	4.2	1.6	

¹ No offerings.

The implications of the data concur with the following wellknown facts. First, there are many more pupils enrolled in the lower grades of the secondary school than in the higher grades and the decrease is continuous from grade to grade with greatest reductions between grades 8 and 9 and grades 9 and 10. Second, the subjects of the seventh and eighth grades are generally prescribed with few electives. In the ninth grade, differentiated courses and curricularis begin to appear and this differentiation becomes more and more pronounced in the successive grades of the senior high school. The net outcome is that a reduction in numbers of pupils enrolled per grade and an increase in differentiation of courses and curriculums proceed concomitantly with the decrease in the extent of grouping just reported. The former concomitant renders grouping less practical; the latter, in many instances. makes grouping seem less desirable or worth while.

Academic, commercial, and other nonacademic subjectmatter fields compared.—In this report academic subjectmatter fields include English, foreign language, mathematics, social studies, and science. The nonacademic fields include physical education (gymnasium), physical and health education (classroom), music, art, industrial and household arts. The commercial field is self-defined.

Fifty-nine per cent of the offerings in academic fields are given to classes segregated into homogeneous groups. (Fig. 15.) The comparable percentages for the commercial and the other nonacademic fields are 39 and 31, respectively. The effect of grade-placement of offerings is obvious in all fields. However, a much more distinct drop occurs between grades 8 and 9 in the nonacademic fields than between the same grades in the academic and commercial fields. suggests that the need for grouping in nonacademic fields is regarded as less imperative than in other fields; that is, when difficulties arise, due to decreased numbers of pupils or differentiated courses or curriculums, or both, less effort seems to be made to continue the grouping than is made in academic and commercial fields. Perhaps also the extent to which nonacademic subjects are commonly offered on an individualized or project basis may have much to do with this feeling that grouping is not so much worth the effort as in other fields. The extent of grouping in the academic field ranges from 93 per cent in the seventh grade to 28 per cent in the twelfth grade; the comparable range in the commercial field is from 67 to 16; in the nonacademic field, from 54 to 17.

The facts harmonize with the known fact that the academic subjects are much more generally required of all pupils, as parts of the core-curriculum, than are either commercial or other nonacademic subjects. This again means relatively large numbers of pupils enrolled in the academic courses and great variation among these pupils in native ability, interests, aims, or needs. Moreover, the tendency for commercial subjects to be offered on an individualized or project basis equals or exceeds in degree the same aforementioned

tendency for the other nonacademic subjects.

Variation in extents of grouping in the several individual subject-matter fields.—English more often than any other subject-matter field is offered to pupils segregated into homogeneous groups. (Fig. 16 and Column 9, Table 11.) Seventy

per cent of all English in grades 7 to 12 is presented to homogeneous groups. Mathematics ranks second with 62 per cent of grouping. Other fields in order of rank are: Social studies, 61 per cent; science, 54 per cent; and foreign language, 46 per cent. From foreign language, which has the least amount of grouping of any academic subject-matter field, to commercial subjects a sharp drop of 7 per cent in the extent of grouping occurs. From commercial subjects to the first of the nonacademic subject-matter fields, namely, physical or health education (classroom), there is a further drop of 2 per cent. This is followed by regular decreases of 1 per cent from one to the other of the remaining nonacademic subject-matter fields in the order named: Physical education (gymnasium), industrial and household arts, music, and art. In art, which ranks lowest of all, 33 per cent only of the classes are grouped.

In each of the academic subject-matter fields as well as in the commercial field the effect of grade placement of offerings follows the pattern already noted as characteristic of the effect of grade placement of offerings for all subjects combined. A tendency toward the same pattern is obvious in the other nonacademic subject-matter fields, but deviations are noticeable. For instance, there is more grouping of physical education (gymnasium) classes in the eighth grade than in the seventh, and there is more grouping of industrial and household arts classes in the eleventh grade than in the tenth. The patterns for music and art are regular except for the fact that the extent of grouping in each subject-matter field remains constant for grades 10, 11, and 12.

The amount of grouping in the various subject-matter fields now may be checked against the assumed standards of practicability and desirability. It was noted above that a greater percentage of classes was grouped homogeneously in English than in any other subject-matter field. Also, a smaller percentage of classes was grouped homogeneously in foreign language than in any other academic subject-matter field. This checks with the known fact that of all subject-matter fields English is the most universally required of all pupils, and of all academic subject-matter fields foreign language is the most optional. In English the pupils are relatively numerous and heterogeneous in abilities, interests,

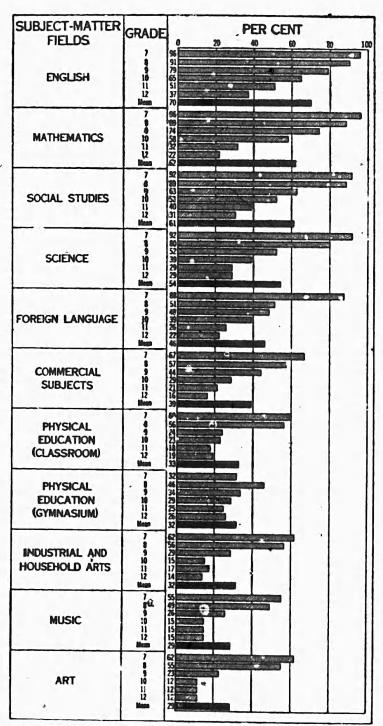


FIGURE 16.—Extent of homogeneous grouping in each subject-matter field and in each grade of all schoels

aims, and needs. In foreign language the pupils are relatively few and homogeneous in abilities, interests, aims, and needs.

Next to English, social studies and mathematics are most uniformly required of all pupils in the lower grades. In the lower grades the extent of grouping in these fields ranks high and compares favorably with the extent of grouping in English. In the upper grades, where the courses in these fields tend to become elective, the extent of grouping decreases at a rate markedly greater than the corresponding rate in English. Similar observations hold for science, which is somewhat less uniformly required in the lower grades than either social studies or mathematics. The extent of grouping in science in the lower grades is less than in either social studies or mathematics, and the decrease is more marked in the upper grades.

Variation in percentages of grouping in the several individual subjects.—The extent of grouping in the various subjects ranges from 81 per cent in general mathematics to 15 per cent in agriculture. (Fig. 17.) Biology, which ranks 14, is nearest the average of all subjects combined in the percentage of its offerings presented to homogeneously grouped pupils. Physical education (gymnasium), with a percentage of grouping of 36, occupies the middle rank. The first 18 ranks are taken by academic subjects, with the single exception of physical or health education (classroom), which ranks 16.5. Academic subjects which rank low—such as chemistry, physics, trigonometry, and solid geometry—are those presented to selected groups of pupils in the upper grades. The ranks occupied by the nonacademic subjects range from 16.5 to 26.5.

Variation within subject-matter fields.—Great variability in the amount of grouping characterizes the individual subjects of any subject-matter field.

In English, composition, grammar, and rhetoric ranks 2; and literature and classics, 4; but public-speaking ranks 26.5.

In mathematics, general mathematics ranks 1; algebra, 9.5; plane geometry, 12; trigonometry, 37; and solid geometry, 39.

In science, general science ranks 3; nature study, 5; physical geography or geography, 8; physiology, 13; biology, 14; chemistry, 23; physics, 26.5; and agriculture, 41.

In social studies, occupations ranks 6; history (including general social science), 7 civics, 9.5; current events, 11; sociology, 30.5; and economics, 32.5.

In foreign language, Spanish ranks 15; Latin, 16.5; French, 18.5; and German, 30.5.

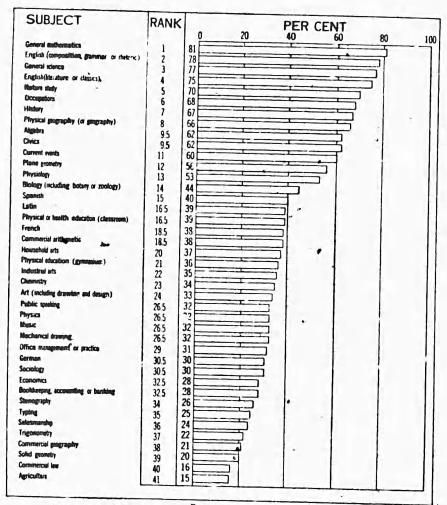


FIGURE 17.—Percentage of homogeneous grouping in each of 41 subjects

Commercial subjects, in general, rank low. Commercial arithmetic ranks 18.5; office management or practice, 29; bookkeeping, accounting, or banking, 32.5; stenography, 34; typing, 35; salesmanship, 36; commercial geography, 38; and commercial law, 40.

The 10 subjects ranking lowest.—One may ask: What do the 10 subjects ranking lowest possess in common that might account for the small amount of grouping in them? These 10 subjects are: Economics; bookkeeping, accounting, or hanking; stenography; typing; salesmanship; trigonometry; commercial geography; solid geometry; commercial law; and agriculture.

From the standpoint of subject matter alone they do not seem to have a great deal in common even though six of them are commercial subjects. But referred to the assumed standards of practicability and desirability of grouping which have been previously suggested they seem to possess one or more of the following characteristics: They are (1) required in but one or a very few curriculums; (2) offered only or usually in the upper grades, (3) offered usually to groups homogeneous in interests, aims, or needs; (4) offered usually to pupils of academic ability average or above, due to elimination which has taken place in the lower grades; or (5) offered, in common practice, on a problem, project, or individualized basis.

The upshot of these considerations is that little refinement of classification is practiced in these subjects for one or both of the following reasons: (1) Grouping is practicable only with considerable difficulty because of reduced numbers of pupils or (2) it is in many cases less desirable because the pupils are already homogeneous in abilities, interests, aims, or needs, or because a high degree of individualization of subject matter makes grouping seem less imperative.

The 10 subjects ranking highest.—One may test the 10 subjects which rank highest by the same standards. These subjects are: General mathematics; English composition, grammar, or rhetoric; general science; English literature or classics; nature study; occupations; history, including general social science; physical geography or geography; algebra; and civics. Obviously, these subjects possess one or more of the following characteristics: They are (1) required in all or many curriculums; (2) offered only in the lower grades or to a large extent in the lower grades; (3) offered to groups highly heterogeneous in interests, aims, or needs; (4) offered to groups highly heterogeneous in academic ability; and

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(5) offered, in common practice, on a group rather than a problem, project, or individualized basis.

These considerations suggest that extensive refinement of classification prevails in these subjects for one or both of the following reasons: (1) Grouping is practicable because of relatively large numbers of pupils; (2) it is always desirable because the pupils are very heterogeneous in abilities, interests, aims, or needs, or because the low degree of individualization common in these subjects makes refined classification seem more imperative.

Variation in amount of grouping in subjects of a given subjectmatter field.—The great variability in extent of grouping in the individual subjects of a given subject-matter field is explicable in a manner similar to the preceding.

5. RELATION OF TOTAL ENROLLMENT TO EXTENT OF GROUPING

Method of organizing the data.—To demonstrate the relation of total enrollment to the extent of grouping, the data were organized to show for each total-enrollment group the exact percentage of classes segregated into homogeneous groups in each subject-matter field in each grade. Tables 12, 13, and 14 present these data for grades 7, 9, and 12. The tables for grades 8, 10, and 11, which are omitted to save space, show trends precisely like those for grades 7, 9, and 12. Averages and the corresponding average deviations were computed for academic, for commercial, for other non-academic, and for all subjects so that each total-enrollment group might be considered individually. Similarly, averages and the corresponding average deviations were computed for each subject-matter field in order that the total-enrollment groups might be considered collectively.

TABLE 12.—Percentages of homogeneous grouping in grade 7, in each subject-thatter field, in different total-enrollment groups

		En	rollme	ent gr	oups			
Subject-matter field ~	51 to 100	101 to 250	251 to 500	501 to 750	751 to 1,000	More than 1,000	Mean	Aver- age devia- tion
1	2	3	4	6		7	8	•
English .		86	89	100	98	98	95	5.2
Foreign language	(1)	100	100	100	100	73	95	8.4
Mathematics	100	91	90	100	100	97	96	4.0
Social studies		84	74	97	100	97	92	8. 7
Science Commercial subjects		74	82	97	100	96	92	8.8
Physical education (gym pesium)	100	(1)	44	(1)	100	75 47	58 58	39. 0 17. 5
Physical education (gym.nasium) Physical education (classroom)	75	38	60	64	60	63	60	7. 3
Music	75	50	50	50	65	- 55	58	8.5
Art	100	60	56	41	65	72	66	13.7
Industrial and household arts	100	67	67	38	68	54	66	13.0
Mean, academic fields. Mean, nonacademic fields (except commer-		87	87	99	100	92	91	6. 2
cial)	90	75	55	47	61	58	61	9.3
Average deviation, academic fields	0.0	5.6	71	72	81	75	78	6. 8
Average deviation, nonacademic fields	120	10.4	6.8	1.4 8.0	6.8	7.8	8.0	

¹ No offerings.

¹ Obtained in all tables by dividing frequency of all offerings in all subject-matter fields by frequency of all cases where pupils were grouped.

Table 13.—Percentages of homogeneous grouping in grade 9, in each subject-matter field, in different total-enrollment groups

		En	rollm	ent gr	oups			A ver
Subject-matter field	51 to 100	101 to 250	251 to 500	501 to 750	751 to 1,000	More than 1,000	Mean	
i	3	3	4	5		7	8	•
English	100	74	87	88	78	74	83	9.0
Foreign language	100	28	38 85	72	61	47	56	18. 3
Boolal studies	100	62	60	49	69	68	79	9.2
Bcianca.		53	56	45	43	54	58	13.
Commercial subjects	100	53	30	38	69	44	56	19. 2
Physical education (gymnasium)	100	47	30	36	35	80	46	18.0
Physical education (classroom)	50	38	33	40	17	9	81	12.1
Music	75	29	16	23	45	22	35	16.7
Art		25	12	18	36	22	36	21. 8
Industrial and household arts		42	30	29	89	23	38	11. 0
Mean, nonacademic fields (except commer-	100	57	65	63	65	63	69	10.
(dal)	78	36	24	20	34	21	87	13.7
Mean, all subject-matter fields.	89	52	50	80	56	46	57	10. 8
Average deviation, academic fields		13.4	16.6	18.4	10.6	9.2 A.0	9.8	

Table 14.—Percentages of homogeneous grouping in grade 12, in each subject-matter field, in different total-enrollment groups

Subject-matter field	51	4					1.	L
	to 100	101 to 250	251 to 500	501 to 750	751 to 1,000	More than 1,000	Mean	A ver- age devia- tion
i	2	8		5	6	1	8	•
English	100	34	23	29	29	46	43	10.5
Foreign language	- 100	22	20	16	5	25	31	19. 5 22. 7
ocial studies.	- 33	4	27	15	0	28	18	13.2
		22	23	23	39	36	40	19.5
Commercial subjects Physical education (gymnasium) Physical aducation (classroom)	- 100	27	29	8	22	35	87	21. 2
hysical education (gymnasium)	100	15	14	15	13	18	15	1.2
		25	20 25	16	0	26	35	25.8
nusic	100	25	5	20	0	12	30	23.0
		0	8	0	0	17	24	25. 2
ndustrial and household arts	100	20	10	10	0	17	21	26.7
Mean, academic fields Mean, nonacademic fields (except commer- cial)		22	24	18	19	34	26 34	24. 5 17. 7
Mean, all subject-matter fields	100	23	14	9	0	18	27	24.0
VCI BER URV DALION SCROTSTIC Selds	1	23	19	16	15	27	32	20.2
verage deviation, nonacademic fields	0.0	7.0	2.8	6. 2 7. 4	13. 2	3.6	7.4	

¹ No offering.

Two obvious facts.—The first obvious fact revealed by an inspection of the data (Tables 12, 13, and 14) is that the percentages of offerings in each total-enrollment group presented to pupils in homogeneous groups do not regularly increase as the total enrollment increases. This generalization holds for each and every subject-matter field and for each grade. The fact is contrary to common expectation. The second apparent fact is the marked increase in the average deviations (Column 9, Tables 12, 13, and 14) for each subject-matter field from grade 7 to grade 9 and from grade 9 to grade 12. Study of the data reveals that this increase in average deviation is due to the tendency for small schools (particularly those of enrollment group 51 to 100) to maintain a relatively higher percentage of grouping in each subjectmatter field in the upper grades than is maintained by the larger schools. Both observed facts have a common expla-The very smallest schools (of which, it must be remembered, there are only five) are grouping entirely within the class section. Obviously, this method of grouping is completely independent of the numbers of pupils who elect or are required to take any subject. Theoretically, therefore, these schools may present 100 per cent of their offerings in any subject or grade to pupils in homogeneous groups. Moreover, the statement will bear emphasis that this policy of grouping within the class section is by no means limited to the schools of the smallest enrollment group. (Fig. 18.) While the smallest schools form all their groups within the class section, 48 per cent of the schools of the next smallest enrollment group—namely, enrollment group 101 to 250—

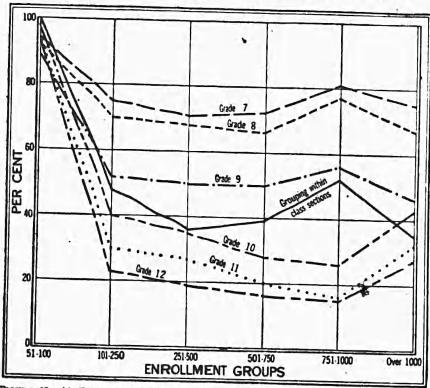


FIGURE 18.—(1) Extent of grouping in each grade in schools classified according to total enrollment, and (2) percentage of schools of each enrollment group reporting consistent efforts to group within the class section

make more or less use of the same procedure. Also from more than a third to more than half of the schools of the remaining total-enrollment groups do some grouping within the class section.

· Characteristic curves for amount of grouping in the several grades.—Attention is called to the characteristic curves which result when the data on grouping for all subjects in grades 7, 8, 9, 10, 11, and 12 are presented graphically. (Fig. 18.) The curves for grades 7, 8, and 9 are essentially identical in

their trends. The curves for grades 10, 11, and 12 differ distinctly from the curves for the lower grades but show close resemblance to each other. For all total-enrollment groups except the smallest, the curve for each grade lies well above the curve for the next higher grade, thus reflecting the tendency for the amount of grouping to decrease from the lower to the higher grades of the secondary school.

In grades 7, 8, and 9 there is a maximum extent of grouping in the smallest schools. The proportion drops to a much lower level in schools of total enrollment 101 to 250, continues to decline in schools of total enrollment 251 to 500, tends to remain at the same level in schools of total enrollment 501 to 750, rises sharply in schools of total enrollment 751 to 1,000, and declines as sharply in schools of total enrollment of more than 1,000. The peculiar shape of the curves suggests that they must be the product of several variables.

Factors influencing the curves.—In the writer's opinion, these curves are the result of at least three variables, namely, (1) the practice of grouping within the class section, (2) differentiation of courses and curriculums, and (3) the practice of grouping into class sections. The effect of each of these will be discussed briefly.

The effect of grouping within the class section upon the comparative amounts of grouping in these highly selected schools is decidedly not negligible, since many schools in each total-enrollment group are employing the procedure. very specific, all schools of total enrollment 51 to 100 group pupils within the class section. (Fig. 18.) The practice is also reported in use, in varying degrees, by 48 per cent of all schools of total enrollment 101 to 250, by 36 per cent of the schools of total enrollment 251 to 500, by 38 per cent of the schools of total enrollment 501 to 750, by 52 per cent of the schools of total enrollment 751 to 1,000, and by 35 per cent of the largest schools with total enrollment of more than 1,000. When these percentages are graphed (Fig. 18) the resulting curve bears a striking similarity to the curves depicting the exact extents of grouping prevailing in grades 7, 8, and 9 of schools of varying total enrollments. resemblance is hardly the result of chance.

Another variable which assuredly enters into the extent of grouping is differentiation of courses and curriculums. That this differentiation increases as schools become larger is a matter of common knowledge. The effect upon the curves under consideration should be obvious, since in many schools the process of electing subjects and curriculums becomes a substitute for that refinement of classification commonly

known as homogeneous grouping.

A third variable affecting the extent of grouping in the schools being studied intensively is the dominant practice of grouping into class sections. The writer hardly needs to explain that this procedure is described as dominant partly because it is used exclusively by more than half of the schools of all enrollment groups except the very smallest. that the curve already referred to, showing the percentages of schools of different sizes making consistent efforts to group pupils within the class section where for any reason there are only enough pupils for one section, lies well below the horizontal 50 per cent line (Fig. 18), is alone sufficient reason for referring to grouping into class sections as the dominant practice, or the principal procedure which is designated as homogeneous grouping in the schools being studied. However, if additional justification were needed one might say that with the exception of the smallest enrollment group, the schools employing grouping within the class section are also making as much use as possible of grouping into class sections. Obviously, therefore, the term "homogeneous grouping" as used in these schools much more frequently applies to grouping into class sections than to grouping within the class section. Of course, the entire situation would be much simpler if homogeneous grouping meant but one thing in the schools being studied. For example, if one were dealing with an imaginary, preconceived situation instead of a somewhat unexpected real one, he could conjure up a group of schools wherein homogeneous grouping was carried to the limits of feasibility by each school in each subject, and wherein homogeneous grouping meant grouping into class sections and not within the class section. Under such circumstances he would find a certain minimum enrollment, possibly 101 to 250, to be necessary before there could be

any grouping at all. Furthermore, the curve representing the amount of grouping in each grade would rise with increasing total enrollments until an enrollment finally would be reached permitting grouping into class sections in all subjects and in all grades. But this simple, imaginary, straight-line curve bears no resemblance to the curve actually obtained for any grade (Fig. 18) because in actual practice the extent of grouping is the resultant of all three components which have just been briefly discussed, and not merely of one of them, as might have been imagined. The first component namely, grouping within the class section—is related to total enrollment. It may exist in schools of any size and it must exist in very small schools if any grouping at all is to be done. The other two components, differentiation of courses and curriculums and grouping into class sections, are also related to total enrollment. Both become more feasible as total enrollment increases. Yet each opposes the other in its effect on the extent to which so-called homogeneous grouping is practiced. The latter tends to make grouping more feasible in the larger schools; the former tends to make formal grouping not only less feasible in any but the largest schools but also in many cases less desirable or less worth the trouble.

The delayed rise of the curves for grades 10, 11, and 12.—The essential difference between the curves for grades 7, 8, and 9 and the curves for grades 10, 11, and 12 is that the former curves rise from total-enrollment group 501 to 750 to totalenrollment group 751 to 1,000, whereas the latter curves do not begin to rise until total-enrollment group 751 to 1,000 is Undoubtedly, the fundamental cause reached. (Fig. 18.) for this difference inheres in the greatly decreased numbers of pupils enrolled in grades 10, 11, and 12 in schools of any and all sizes as compared with the numbers enrolled in grades 7, 8, and 9. Since schools of a sizes differentiate subjects and curriculums more in the upper grades than in the lower, it follows that only the largest schools have sufficient numbers of pupils enrolled in the upper grades to provide both this differentiation of courses and curriculums and also that further refinement of classification known as homogeneous grouping.

The curve for the ninth grade analyzed.—Considerably greater percentages of academic classes in all sizes of schools are segregated into homogeneous groups than is the case for all classes combined. (Fig. 19.) Classes in commercial subjects show great variation in the proportion of grouping practiced in schools of varying sizes. However, only in total-enrollment group 751 to 1,000 does the percentage of grouping in commercial classes exceed the percentage of grouping in academic classes. Nonacademic classes rank

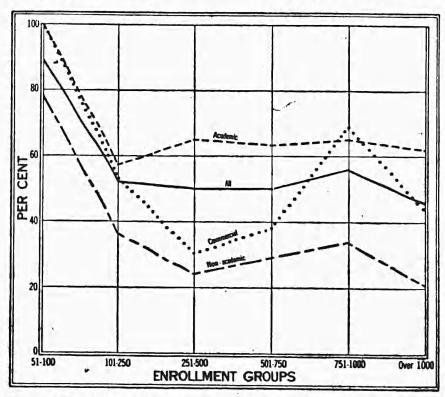


FIGURE 19.—Trends in extent of grouping in the various total-enrollment groups in academic, commercial, and other nonacademic subject-matter fields. (Grade 9)

uniformly and distinctly below both commercial and academic classes in all enrollment groups in the percentage of classes segregated into homogeneous groups.

Despite the variations already noted, the curves for academic, commercial, and other nonacademic subject-matter fields show in greater or lesser degree the trends already discussed for all subjects combined in grades 7, 8, and 9. Especially is it noted that each of these curves shows the

characteristic rise in total-enrollment group 751 to 1,000 and the characteristic decline in the largest total-enrollment group.

The curve for the eleventh grade analyzed.—In this grade (Fig. 20) the curve for academic subjects lies well above the curve for all subjects combined except in the smallest enrollment group. There the difference is not great. Extents of grouping in the nonacademic and commercial fields are

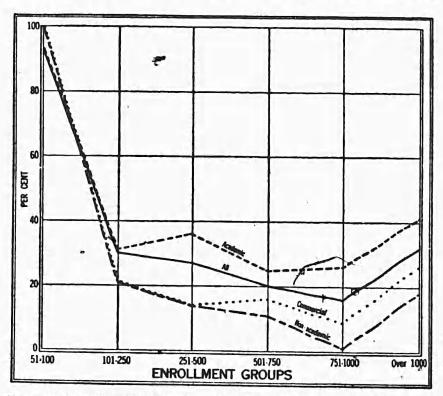


FIGURE 20.—Trends in extent of grouping in the various total-enrollment groups in academic, commercial, and other nonacademic fields. (Grade 11)

identical in the three smallest enrollment groups. In the other enrollment groups the curve for nonacademic subjects lies well below the curve for commercial subjects. The characteristic rise in the largest enrollment group is in evidence from the almost perfectly parallel lines formed by the three curves.

Effect of increase of grade in a given enrollment group.— In academic, commercial, and other nonacedemic subjectmatter fields of total-enrollment group 751 to 1,000, a marked drop in the extent of grouping occurs between grades 9 and 10. (Fig. 21.) In the academic and nonacademic fields the decrease continues at a lessened rate through grades 11 and 12. In the nonacademic fields no grouping at all is reported in the twelfth grade.

The trend in the commercial field in grades 10, 11, and 12 is the reverse of the usual order. This tendency is noted

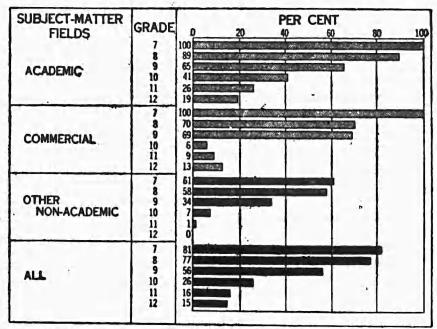


FIGURE 21.—The relative extents of grouping in grades 7, 8, 9, 10, 11, and 12, in academic, commercial, and other nonacademic fields in schools of enrollment 751 to 1,000

elsewhere and seems due to the efforts made by schools of all sizes to concentrate most of their commercial subjects in grades 11 and 12, thus reversing the usual order with respect to the numbers of pupils enrolled in the various subjects in grades 10, 11, and 12.

Individual subject-matter fields show the trend indicated for all subjects.—The trend noted for all, for academic, for commercial, and for other nonacademic subjects is prevalent also in the individual subject-matter fields, although variations occur. (Tables 12, 13, and 14.)

4. GRADE ENROLLMENT AND EXTENT OF GROUPING

Relation of grade enrollment to percentage of grouping in each subject-matter field.—A valid exploration of the extent



of homogeneous grouping in these selected schools includes a study of the data organized according to grade enrollment. The data for grade 9 so organized are reproduced here. (Table 15.) Tables for other grades are omitted to save space. They show trends analogous to those of grade 9. In many ways these data constitute a check on the data previously presented under the discussion of total enrollment. Like the data for total enrollment they show that the extent to which homogeneous grouping is practiced bears no such simple and positive relationship to the number of pupils enrolled per grade as many persons have commonly assumed. The same tendency for schools of the smallest grade-enrollment group to practice what they call homogeneous grouping more than schools of the largest grade enrollments practice what they call homogeneous grouping is obvious. (Columns 2 and 10, Table 15.)

With such variations as one should expect, due to their different organization, the data illustrate very well the arguments advanced previously in connection with the study of total enrollment, concerning the effect upon the extent of grouping actually practiced in schools of different sizes of:

(1) Grouping within the class section and of (2) differentiated courses and curriculums. It is unnecessary to repeat those arguments here.

The data on grade enrollment confirm the findings under the study of total enrollment, and bring out two additional relationships. First, the tendency for more grouping to be done in academic than in nonacademic subject-matter fields is a characteristic common to all grade-enrollment groups as is shown by the means for the academic and the nonacademic fields. (Table 15.) Second, schools with ninth-grade enrollments of 200 or more pupils do slightly more grouping in the academic subjects than schools with ninth-grade enrollments of fewer than 200. That is, the average of the means for the academic fields in the five smallest grade-enrollment groups (Table 15) is 63 per cent as compared with 66 per cent for the academic fields in the four largest grade-enrollment groups. Comparable percentages for grade 7 are 89 and 95; for grade 12, 25 and 39.

TABLE 15.—Percentages of grouping in each subject-matter field for different grade-enrollment groups. (Grade 9)

				Orad	Orade enrollmen	nent					
Subject-matter field	29 or fewer	30 to 89	60 to 99	100 to 149	150 to 199	200 to 249	260 to 499	500 to 1,000	More than 1,000	Мева	age de- vistion
	•	-	+	-	•	-	ec	•	2	=	2
English Poreign language Mathematics Mathematics Social studies Science Commercial subjects Commercial subjects Physical education (gymnastum) Physical education (classroom) Music Art Art Mean, academic fields Mean, norseedemic fields Mean, norseedemic fields Mean, all subject-matter fields	24 25 3 2 2 3 3 2 5 5 5 5 5 5 5 5 5 5 5 5	57.834.84.88.05.22.84	22 58222223623833	888233±8423883	# # # # # # # # # # # # # # # # # # #	288 3128 0 5 888 338 328 328 328 328 328 328 328 328	, 52118881848524	\$1334488445545 \$133444888445545	\$2\$\$\$2%000F\$0\$	**************************************	44262525252545254625
A versge deviation, academic fields A versge deviation, nonacademic fields	20.00	19.6	15.2	19.4	4.6	6.8	11.6	0.00	9. 01 * X	10.2	

The effect of grade enrollment, on extent of grouping, from another point of view.—The data were studied further to determine how frequently the schools of a given gradeenrollment group presented any subject in any grade to pupils grouped homogeneously less often than to pupils grouped heterogeneously. (Table #6.) Since such frequencies represent conditions where heterogeneous grouping predominates they should show whether grade enrollment in actual practice exercises any influence over the extent of grouping. If the extent to which grouping is practiced increases with grade enrollment, then the frequencies in any column of Table 16 should show a decrease when read from top to bottom. Such a tendency is not obvious except for the totals in Column 8. In this column the trend is slight, with two interruptions for grade-enrollment groups 150 to 199 and 200 to 249.

However, if one compares the average frequency for the five smallest grade-enrollment groups with the average frequency for the four largest grade-enrollment groups, faint tendencies of the trend noted in the total column appear in the columns for the several grades. These comparative figures, obtained by dividing the subtotals in each column by 5 and 4, respectively, are: For grade 7, 5.2 and 2.6; for grade 8, 7.4 and 7.5; for grade 9, 17.2 and 16.2; for grade 10, 23.6 and 21.8; for grade 11, 32.2 and 30.5; for grade 12, 33.6 and 31.3; and for all grades (Column 8) 119.2 and 101.5. The only interruption in the trend from this point of view occurs for grade 8. (Column 3.) Therefore, in general, it may be stated that the extent of grouping increases slightly with increase in grade enrollment. But the amount of increase is surprisingly small.

In passing, the reader's attention is called to the figures in the last horizontal totals column of Table 16. The increases in these totals from left to right are further evidence of the rapidity with which the use of homogeneous grouping declines from the lower to the higher grades of the secondary school.

TABLE 16.—Frequencies by grades and grade enrollments with which subjects are presented to homogeneous groups in less than 50 per cent of the cases where the subjects are offered

[Frequencies refer to individual subjects but all subjects are included]

Grade enrollment			On	de			
Grade euroument	7	8	9	10	11	12	Total
1	2	1	4	5	6	7~	8
Fewer than 30. 30 to 59. 60 to 99. 100 to 149. 150 to 199.		8 4 13 4 8	7 21 19 21 18	9 31 24 30 24	28 34 38 28 33	31 37 35 36 29	86 135 134 119 122
Subtotal	26	37	86	118	161	168	596
200 to 249	0	12 5 13 0	14 18 12 21	25 25 19 18	32 32 30 28	30 31 33	119 111 109 67
Bubtotal	8	30	65	87	122	94	406
Total. Total, less frequencies for group of more than 1,000.	34 34	67 67	151 130	206 187	283 255	262 262	1, 002

Read this table as follows: In the seventh grade of schools with seventh-grade enrollment of fewer than 30, three subjects were offered to pupils grouped homogeneously in less than half the classes formed. In the eighth grade of schools with eighth-grade enrollment of fewer than 30, eight subjects were offered to pupils grouped homogeneously in less than half the classes formed, etc.

Relation of grade enrollment to number of homogeneous levels provided.—The data were studied further to determine the most frequent, or typical, number of levels provided for in each subject-matter field by schools of each grade-enrollment group. The results are set forth in Tables 17, 18, and 19, for grades 7, 9, and 12. The tables are self-explanatory. In grade 7 (Table 17) English and mathematics are the only two fields wherein a definite number of levels is provided for in each grade-enrollment group. In these two fields there is a slight and irregular tendency for the typical number of levels to increase with increased grade enrollment. In general, the tendency to provide for three levels (the lowest. middle, and highest thirds of the class) is reflected by the data of Table 17. However, the schools in grade-enrollment group 200 to 249 show considerable tendency to provide for a larger number of levels. This latter tendency is much less marked in schools with seventh-grade enrollments of 250 or more.

In grade 9 (Table 18) the typical number of levels provided for never exceeds three. The number of levels in the non-academic subjects becomes variable or fluctuating.

Table 17.—Typical number of levels of ability provided for in grade 7 in schools of different seventh-grade enrollments

Out to the same of the same			G	rade er	rollme	nt	7	
Subject-matter field	29 or fewer	30 to 59	60 to 99	100 to 149	150 to 199	200 to	250 to 499	500 to 1,000
. 1	2	3	4			7	8	•
English Foreign language Mathematics Social studies Science Commercial subjects Physical education (gymnasium) Physical education (classroom) Music Art Industrial and household arts Mean, academic fields Mean, nonacademic fields Mean, all subject-matter fields	2 1 (1) 1 1 1 1	(1) 2 1 2 (1) 2 (1) 1 (1) 1 2 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	3 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	4 1 4 3 4 (1) 1 3 3 3 3 3 4 8 8	(7) 3 3 3 3 (7) 4 1 1 3 8 8 8 8	(7) 8 1 4 (7) 8 1 8 8 8 8 8 8 8	3233381833388	3 2 8 8 8 8 8 1 3 3 3 3 3

¹ Figure 1 appearing in this table indicates an indefinite or varying number, usually 2 or 3.

¹ No offerings to homogeneous groups.

Table 18.—Typical number of ability levels provided for in grade 9 in schools of different ninth-grade enrollments

				Grad	e enro	llmer	at		
Subject-matter field	29 or fewer	30 to 59	60 to 99	100 to 149	150 to 199	200 to 249	250 to 499	500 to 1, 000	More than 1,000
1	2	1	4			7	8	•	10.
English Foreign language Mathematics Social studies Science Commercial subjects Paysical education (gymnasium) Physical education (classroom) Music Art Industrial and household arts Moan, academic fields Mean, nonacademic fields Mean, all subject-matter fields	1 1 1 1 1 1 1 1 1 1 3	2 1 2 2 1 2 1 2 (7) 2 2 2 2 2 2	3 2 3 3 3 2 2 2 1 2 2 3 2 2	3 2 2 3 3 2 1 1 2 1 1 3 1	82282282188288	3 2 3 3 3 2 3 (F) 2 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	323332133113313	3 3 3 3 3 1 1 2 1 1 1 2 1 1 2 1	33 33 33 33 33 33 33 33 33 33 33 33 33

¹ Figure 1 appearing in this table indicates an indefinite or varying number, usually 2 or 3.

No offerings to homogeneous groups.

In grade 12 anything resembling a fixed policy with respect to the number of levels provided for has disappeared in all subject-matter fields except English.

TABLE 19.—Typical number of ability levels provided for in grade 12 in schools of different twelfth-grade enrollments

***************************************			G	rade er	rollme	nt		
Subject-matter field	29 or fewer	30 to 59	60 to 99	100 to 149	150 to 199	200 to 249	250 to 499	500 to
1	1	1	4	5	6	7	8	
English Foreign language Mathematics Social studies Socience Commercial subjects Physical education (gymnasium) Physical education (classroom) Music Art Industrial and household arts Mean, academic fields Mean, all subject-matter fields	1 1 1 1 1 2 8 1	2 1 1 2 2 1 2 1 2 (7)	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 1 1 1 0 0 0 0 0 1 1 1	8 1 1 1 1 1 1 1 1 1	2 1 2 1 4 2 4 7 1 1 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	3 2 1 2 2 1 1 (7)	3 2 1 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

¹ Figure 1 appearing in this table indicates an indefinite or varying number, usually 2 or 3.
³ No offerings to homogeneous groups.

Summary of typical number of levels provided for in each subject-matter field in each grade.—If all schools of all grade enrollments are combined, the typical number of levels for each grade in each subject-matter field may be shown. (Table 20.) This table is interesting in many respects. If a line be drawn diagonally on the table from seventh-grade industrial and household arts over to twelfth-grade English, in only two instances (eighth-grade art and eighth-grade industrial and household arts) will a typical definite number of levels be found below the diagonal. All the rest are indefinite or fluctuating. This illustrates the two essential facts, namely, that (1) the number of levels provided for becomes less fixed from the lower to the higher grades and (2) a much more consistent number of levels is provided for in academic than in nonacademic subjects.

In grades 7 and 8 the typical number of levels provided for is a fixed number, usually three, in both academic and nonacademic fields. (Columns 2 and 3, Table 20.) In grade 9, three levels are still maintained in academic fields:

in grade 10 the typical number of levels in academic fields has dropped to two; in grades 11 and 12 the typical procedure provides for a fluctuating number of levels, which generally speaking, means either two or three, depending principally upon the number of pupils available in a given subject in a given semester.

Table 20 — Typical number of homogeneous levels provided for in each grade in each subject-matter field. All schools

			On	ade		
Subject-matter field	7	8	9	10	11	12
	2	3	1			7
English Foreign language Mathematics. Social studies Science Commercial subjects Physical education (gymnasium) Physical education (classroom) Music. Art Industrial and household arts Mode, academic subjects Mode, nonacademic subjects	3 2 3 3 3 (7) 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 2 3 3 3 2 1 2 3 3 3 3 3 3 3 3 3 3 3 3	3 2 3 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 2 2 1 1 1 1 1 1 1 1 1 1 1	3 11 2 1 1 1 1 1 1 1 1 1	

Pigure 1 appearing in this table indicates an indefinite number of levels, usually 2 or 2. No offerings to homogeneous groups.

& RELATION OF TYPE OF ORGANIZATION TO EXTENT OF GROUPING

Different types of schools ranked.—The different types of schools rank as follows according to the extent of homogeneous grouping practiced in all subjects: Schools including grades 7 to 9, first; the miscellaneous "All others" group including atypical numbers of grades, second; schools including grades 7 to 12, third; schools including grades 9 to 12, fourth; schools including grades 6 to 11, fifth; schools including grades 10 to 12, sixth; schools including grades 8 to 11, seventh. (Fig. 22.)

Schools including grades 7 to 9 hold first rank in academic, commercial, and other nonacademic fields. (Fig. 22.) The miscellaneous "All others" group holds second place in each field. Schools including grades 9 to 12 rank third in academic and commercial fields but fifth in other nonacademic fields. Schools including grades 7 to 12 rank fourth in

academic, commercial, and other nonacademic fields. Only a triffing difference exists between schools including grades 9 to 12 and schools including grades 7 to 12 in the total amount of grouping. Schools including grades 6 to 11 rank sixth in academic fields, seventh in commercial fields, and third in other nonacademic fields. Schools of this type are peculiar in stressing other nonacademic subjects more than the commercial or the academic. Schools including grades 10 to 12 rank fifth in academic fields and sixth in commercial

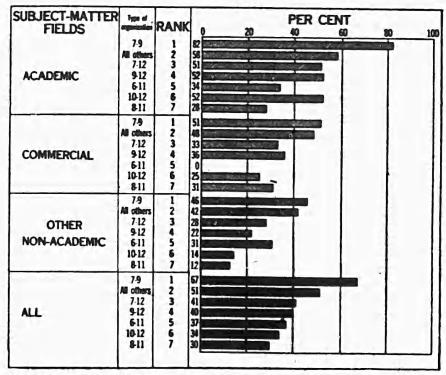


FIGURE 22.—Extents of homogeneous grouping in academic, commercial, and other nonacademic fields in schools classified according to grades included

and other nonacademic fields. Schools including grades 8 to 11 occupy fifth place in commercial fields but last place in both academic and nonacademic fields.

The easy lead maintained by schools including grades 7 to 9 and the miscellaneous "All others" group is probably attributable in part to the energetic policies of these schools in providing for individual differences. But in large measure it must also be attributed to the fact that these schools have the favoring influences with which the lower grades surround

the practice of homogeneous grouping. This argument is supported by the relatively low rank of schools including grades 10 to 12 which are also reorganized schools but handicapped by the practical difficulties of smaller grade enrollments and the necessity imposed by the grade level represented for greater differentiation of courses and curriculums.

More detailed study of the data.—Tables were constructed to show for each type of school organization the percentages of offerings, in each subject-matter field and in each grade, presented to pupils in homogeneous groups. Because of limitations of space only one of these tables—that for schools including grades 7 to 9—is reproduced here. (Table 21.) A careful study of this table, and of the corresponding tables for other types of school organization, justifies the following comments:

First, consistent decrease in the amount of grouping from the lower to the higher grades of the secondary school is the rule in academic subjects for all types of schools. The same trend is noticeable in nonacademic subjects. However, the rate of decrease in nonacademic subjects is less than in academic subjects in all types of schools, notably in schools including grades 10 to 12, grades 9 to 12, or grades 6 to 11. In these latter types of schools the amount of grouping in nonacademic subjects remains almost constant as the grade advances. A similar but less pronounced trend is observable for the nonacademic subjects in Table 21.

Second, the different academic subject-matter fields assume a definite relationship to each other, with respect to the amount of homogeneous grouping practiced. This relationship remains fairly constant throughout all seven types of schools. For example, English ranks first in extent of grouping in six of the seven types of schools, and ties for first place with mathematics in schools including grades 7 to 9. Foreign language takes fifth or last place in extent of grouping in five of the seven groups and ties with science for fifth place in schools including grades 9 to 12. It rises to third place in schools including grades 8 to 11. Social studies and mathematics vie for second and third ranks. One or the other of these subject-matter fields occupies second rank in six of the seven types of schools. Science rises to second rank

only in the miscellaneous "All others" group. Otherwise, science tends to occupy fourth place among the academic subject-matter fields, dropping to fifth place in schools including grades 8 to 11 and tying for fifth place with foreign language, as previously mentioned, in schools including grades 9 to 12.

TABLE 21.—Percentages of offerings presented to homogeneous groups in each grade and in each subject-matter field of schools including grades 7 to 9

Orblast matter fold		Grade	- 4		Average
Subject-matter field	7	8	9	Mean	devia- tion
t	3		4	5	
English Foreign language Mathematics Social studies	99 77 100 97 99 50 56 58 87 62 59 94 87 78 7, 2	94 53 92 90 87 54 44 46 58 52 54 83 50 12 2 8	81 54 80 69 62 49 38 15 38 27 37 69 31 56 9,0	91 61 91 85 83 51 46 47 50 82 46 67 8.2	7.0 10.3 7.0 11.0 12.7 2.0 6.3 7.7 12.3 8.7 10.0 8.3

The relative extents of grouping in the nonacademic subjects present no such similarities as have just been noted for the academic subjects. On the contrary, a desultory if not even a chaotic situation is in evidence in nonacademic fields. For example, in extent of grouping, physical education (gymnasium) ranges in rank among the nonacademic subjects from 1 to 4 in the various types of schools; physical or health education (classroom) ranges from 1 to 5; music from 2 to 5; art from 2.5 to 5; and industrial or household arts from 1 to 4. These and other facts already presented and yet to be presented suggest that in schools where homogeneous grouping is practiced grouping is considered more essential in the academic than in the nonacademic subjectmatter fields. If the arrangement conveniently extends itself to the nonacademic subject-matter fields it is permitted to do so.

Third, the commercial subjects show trends in extent of grouping resembling those of the academic subject-matter fields in schools including grades 7 to 9, 7 to 12, 10 to 12, and 9 to 12. In the other three types the trends resemble those of the other nonacademic subjects.

Finally, the following facts should be noted concerning specific types of schools. Schools including grades 10 to 12 and 9 to 12 have a remarkably low amount of grouping in the nonacademic subject-matter fields, and this small amount remains almost a constant, 14 per cent for schools including grades 10 to 12 and 22 per cent for schools including grades 9 to 12, throughout all grades included. Schools including 6 to 11 are the most erratic of all types in the extent to which grouping is practiced in the various grades and subject-matter fields. Only English and physical education (gymnasium) are carried through all grades with at least some grouping. The miscellaneous "All others" type shows no grouping at all in the nonacademic subjects in grades 11 and 12. But in grades 7, 8, and 9 the extent of grouping exceeds even that practiced in the corresponding grades of schools including grades 7 to 9. Also the amount of grouping in grade 10, in the nonacademic subject-matter ields, exceeds the amount practiced in grade 10 of schools including grades 10 to 12, and the amounts practiced in academic subjects differ only slightly in grade 10 of the two types of schools.

Comparison of extent of grouping in the ninth grade of four types of schools.—In the ninth grade of schools including grades 9 to 12, grouping is stressed in English, mathematics, and social studies. (Fig. 23.) English is especially stressed, 99 per cent of the classes being grouped. Only about half the classes in foreign language, science, or commercial subjects are segregated into homogeneous groups. Grouping in the nonacademic subjects is uniformly unemphasized.

In the ninth grade of schools including grades 7 to 9, English, mathematics, and social studies are also most frequently presented to homogeneous groups. Science is presented to homogeneous groups in more than 60 per cent of the offerings and foreign language in more than half the offerings. Pupils in commercial subjects are

ungrouped in more than half the offerings. More emphasis is placed on grouping in the nonacademic subjects in schools including grades 7 to 9 than in schools including grades 9

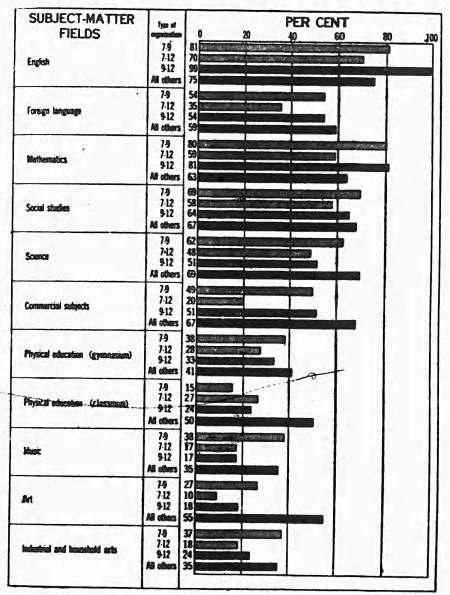


Figure 23.—The extents of grouping in the several subject-matter fields for different types of schools classified according to grades included. (Grade 9)

to 12, although even in the former schools far less than half the offerings are presented to pupils homogeneously grouped.

Schools including grades 7 to 12 also emphasize English, mathematics, and social studies but in a far less degree than

schools including grades 7 to 9 or 9 to 12. Pupils are grouped in only one-fifth the commercial offerings, and in less than a fifth of the offerings in music, art, and industrial and household arts. Slightly more than a fourth of the physical education offerings are given to pupils segregated into homogeneous groups.

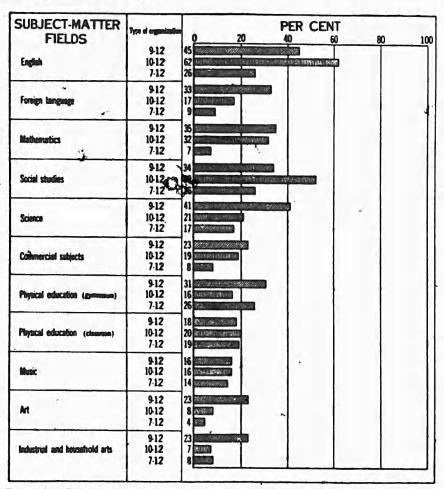


FIGURE 24.—The extents of grouping in the several subject-matter fields for different types of schools classified according to grades included. (Grade 12)

The miscellaneous "All others" group is distinguished by its relative emphasis upon grouping in all fields. In extent of grouping in science, commercial subjects, physical education, and art, it excels the other three types.

Comparison of the extent of grouping in the twelfth grade of three types of schools.—English and social studies are emphasized much more by schools including grades 10 to 12 than

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by schools including grades 9 to 12 or 7 to 12. (Fig. 24.) Schools including grades 9 to 12, however, hold up much more uniformly in all fields in the extent of grouping than either schools including grades 10 to 12 or 7 to 12. The former type excels the latter types in foreign language, mathematics, science, commercial subjects, physical education (gymnasium), art, and industrial and household atts. Schools including grades 7 to 12 are chiefly characterized by the small amount of grouping which is practiced in the twelfth grade.

6. SUMMARY

This chapter has shown the following statements to be true concerning a group of 289 highly selected schools known to be placing unusual emphasis on homogeneous grouping:

First, less than half the total offerings of these schools are presented to pupils in homogeneous groups.

Second, the percentage of offerings presented to pupils in homogeneous groups decreases regularly from the lower to the higher grades of the secondary school.

Third, grouping is employed much more extensively in the academic fields than in the commercial fields, and considerably fore in the commercial fields than in the other nonacademic fields. When 41 individual subjects are ranked according to the percentages of their offerings which are presented to pupils in homogeneous groups, the first 18 ranks are taken by academic subjects with the single exception of physical education (classroom) which ranks 16.5. The need for grouping seems to be considered less imperative in the commercial and in the other nonacademic fields than in the academic fields. When difficulties arise due to decreased numbers of pupils or differentiated courses or curriculums, or both, less effort is made, apparently, to continue the grouping in the commercial and the other nonscademic fields than in the academic fields. The extent to which commercial and the other nonacademic subjects commonly are offered on an individualized or project basis seems to have much to do with the feeling that grouping is not so much worth the effort as in academic fields.

Fourth, no simple straight-line curve portrays the extent of grouping in schools of different total enrollments. The

curve describing the actual situation is the result of at least three variables, namely, grouping within the class section, differentiation of courses and curriculums, and grouping into class sections. The first variable operates in the smallest schools to the exclusion of the other variables, and in different degrees influences the extent of grouping in schools of all other total-enrollment groups. The second variable tends to make grouping less feasible in all but the largest schools and also in many cases less desirable, or less worth the trouble. The third variable, up to a certain limit, makes more and more grouping possible as the total enrollment increases.

Fifth, of all types of schools classified according to grades included, schools including grades 7 to 9 employ grouping most extensively in all subject-matter fields. The miscellaneous "All others" type holds second place in each field. The easy lead maintained by these two types of schools is probably attributable in part to their energetic policies in providing for individual differences. It must also be attributed largely to the favoring influences with which the lower grades surround the practice of homogeneous grouping.

Sixth, the number of pupils enrolled in a given grade exercises a slight but perceptible influence on the extent of grouping. Slightly more grouping is employed in a given grade when the grade enrollment exceeds 200 than when the grade enrollment is less than 200.

Seventh, the number of homogeneous levels provided for becomes less fixed from the lower to the higher grades; but the number of levels remains much more constant in the academic than in the nonacademic subjects. The typical number of levels provided for in grades 7 and 8 is usually three in both academic and nonacademic subjects. In grade 9 the three levels are maintained only in academic subjects; in grade 10 the typical number of levels in academic subjects has dropped to two; in grades 11 and 12 the number of levels varies with the numbers of pupils available.

Eighth, the extent to which grouping is practiced in the various grades and subject-matter fields of these selected schools is determined largely by common-sense considerations of practicability and desirability.

CHAPTER IV: BASES OF GROUPING

1. THE GROUPING CRITERION IN THEORY AND PRACTICE

A point of view.—Probably no feature of a plan for homogeneous grouping equals in importance the criterion which determines the pupil's place in the refined order of classification. In selecting this criterion it seems fair to proceed on the premise that the pupils who are permitted to take a course have mastered its prerequisites. Otherwise, the promotion plan would need modification. It further seems fair to assume that the purpose of refined classification or homogeneous grouping is to remove or minimize only the most serious impediments to group learning and group instructions, since it is absurd to think that individual differences will be eradicated by any kind of classification. Therefore, in general, it may be tentatively assumed that the criterion should consist of the best available measures of those qualities of the pupil which are most significant of the probable rate at which he will acquire the concepts, attitudes, appreciations, knowledges, or skills, which it is the function of the course to develop.

This assumption needs further elaboration because the probable rate of learning is dependent upon two kinds of qualities, first, those relatively subject to change, and second, those relatively unchangeable. Industry, application, or effort is illustrative of the former. Academic ability as measured by a group mental test is illustrative of the latter. Effective teaching aims to modify the changeable qualities. Hence, under the influence of effective teaching, groups which at the outset are homogeneous with respect to changeable qualities rapidly become heterogeneous. On the other hand, if groups were formed on the basis of relatively unchangeable native abilities, homogeneity not only would be more enduring but also one of the objectives of the teacher, namely, that of getting each pupil to make the most of those abilities, would be more easily attained.

So little is known of the relative changeability of pupils' traits, such meager evidence is available concerning the

effects of the several traits upon the probable learning rate, and so few of these traits are measurable by valid and reliable methods that the point of view set forth in the preceding paragraphs is mainly speculative. However, as a tentative position from which to contemplate actual practice it should do as well as any other.

The data of this chapter.—This chapter shows (1) the extent to which each of several bases of grouping is being used in each subject-matter field in the 289 schools selected for intensive study; (2) the extent of use of each basis of grouping as affected by geographical considerations; and (3) the differences in extent of use of each basis in schools classified (a) according to total enrollment and (b) according to grades included.

#. SELECTION OF BASES FOR STUDY

Method of selection.—All bases revealed by a careful search of the literature are included in this study. Opportunity was further afforded the respondents to indicate still other bases or variant terminologies in actual use.

Bases in use.—The following 16 bases constitute all criteria which are being used to group pupils homogeneously in the selected group of schools:

- 1. Group intelligence-test score or mental age.
- 2. Intelligence quotient from a group mental test.
- 3. Average scholarship marks in all subjects combined.
- 4. Average scholarship marks in this or related subjects.
- 5. Educational or achievement test age or score.
- 6. Educational or achievement quotient.
- 7. Teacher's rating of pupil's academic ability or intelligence.
- 8. Average of several teachers' ratings of pupil's academic ability or intelligence.
 - 9. Individual intelligence-test score or mental age.
- 10. Intelligence quotient from individual test.
- 11. Health.
- 12. Industry, application, or effort.
- 13. Social maturity.
- 14. Physical maturity.
- 15. Type of home environment.
- 16. Score from a prognostic test.

Chronological age, although frequently mentioned in the literature, was not included for special study since it is a

part of the regular grade classification and an important component of bases 2, 6, 10, 13, and 14.

3. DEFINITION OF BASES

Self-defined bases.—For the purposes of this study each of bases 1, 2, 3, 4, 5, 6, 9, 10, and 16 is regarded as sufficiently definite to represent a fairly constant practice. However, bases 7, 8, and 11 to 15 are only vaguely suggestive of the practices with which they are connected. Hence they are defined in the following paragraphs in terms of the actual practice of the schools being studied.

Ratings of pupil's academic ability or intelligence.—Sometimes this rating is made by one teacher only (basis 7); again the average of several teachers' ratings of academic ability or intelligence is taken (basis 8). Rating scales of from 2 to 9 points are used. Half of the schools employing these bases use a 5-point scale and one-fourth use a 3-point scale. Scales with less than 3 or more than 5 points are used infrequently.

As a rule, the first rating of academic ability or intelligence available for use in the secondary school is that made by the pupil's elementary-school teachers and transmitted with the pupil's other records when he is promoted to high school. The typical practice is to make additional ratings of each pupil's academic ability or intelligence at each marking period. However, a few schools report that the rating is made only once, namely, just prior to the pupil's entrance to high school.

The health rating.—The pupil's health rating is made usually by means of scales ranging from 2 to 6 points, the 5-point scale predominating. Often the points on the scale are defined by such terms as excellent, good, fair, poor, not normal. Sometimes more specific terms are used to explain the code number assigned as a rating, such as: Corrective case; home call needed; further examination needed; modified gymnasium work, no sports; received treatment. Another frequent practice consists of stating in a briefly summarized form the pupil's actual physical condition and in making the numerical rating from a careful consideration of all the data. In fact, in many schools using this plan



^{1 800} secs. 5 and 7, Ch. I, Pt. IV.

the data are not reduced to an actual numerical rating, but are only taken into consideration when the pupil is assigned to a homogeneous group.

Health ratings are made usually once a year for all pupils and for certain individual pupils at any time during the school year upon the recommendation of the teacher, adviser, or counselor.

It appears that lack of trained personnel frequently places the responsibility for making this rating upon those hardly qualified to make it. (Table 22.)

Rating of industry, application, or effort.—This rating is made in three-fifths of the schools by means of a 5-point scale. By far the most common practice is to make the rating at each marking period—that is, from two to four times each semester. However, certain schools make the rating "only when needed," and a very few make the rating only once, just prior to the pupil's entrance to high school, a practice hardly to be commended.

Table 22.—Percentages of certain subjective ratings, used as bases of grouping, made by various agents or agencies

			Item	s rated		
Agent or agency making the rating	Health	Physical maturity	Social matu- rity	Indus- try, ap- plica- tion, or effort	Home environ- ment	Aver-
1	1	1				7
Attendance officer Class adviser Coach Counselor Department head Director of measurements Family physician Guidance clinic	2	1 3	8 2 2 2		7	8.1 0.1 0.1 0.1
Parent Physical-education teacher Principal Psychlatrist	16 7	1 18 15	40	45	17	0. 6. 24.
School nurse School physician Superintendent Supervisor Teacher	16 2	20 9 4	3 2 40	2 49	21 3 19	13. 6 2. 6 0. 1 29. 1
Vice principal Visiting teacher		1	:::::::		10	0. 2
Total	. 100	100	100	100	100	10

Rating of social maturity.—A frequent tendency is to use a numerical code defined in terms of characteristics, presumably of importance for grouping. Where a code is used, such terms as the following are found: Leader among pupils; conscious of other fellows' rights; individualistic; willing to cooperate; active in school organizations. More frequently the pupil is assigned an estimated "social age." This age is determined by the teachers through observation of the pupil's social interests, the type of games he likes, the reading matter that pleases him most and the ages of the pupils with whom he prefers to associate.

The rating of social maturity is made annually or at any time misplacement is noticed by the teacher, department head, adviser, or counselor.

Rating of physical maturity.—This rating is most frequently made by use of a 3-point scale. In some instances specific data are recorded concerning height, weight, ossification, and dentition. In one school² height and weight are reduced to "ages" by the use of tables which record the average height and average weight of boys and of girls of different chronological ages. Dentition age in this school is determined by the school physician.

Physical maturity is determined annually for all pupils and reexaminations are made at irregular intervals when necessary or advisable.

Ratings of home environment.—Most frequently 3-, 5-, or 7-point scales are used. Occasionally a numerical code is employed in which the code numbers stand for such characteristics as: Parents well educated; good social standing; moderate circumstances; eager to give children an education; poor; broken home; parents immoral; parents criminal. A practice less often used is that of recording briefly and systematically the essential facts learned about the home. The person doing the grouping then decides whether any of the known facts about the home have any bearing upon the pupil's assignment to a homogeneous group.

Typically the rating of home environment is made once only for all children, namely, at entrance to high school. However, provision is made for a rerating whenever the

Ben Blewett Junior High School, St. Louis, Mo.

child is under special study. As with other ratings the data are sometimes transmitted from the elementary school to the high school.

By whom the various ratings are made.—The essential data concerning the person or persons responsible for making the various ratings are given in Table 22. The responsibility for all ratings rests heavily upon the teacher and the principal. Next in line the school nurse is depended upon. Then come in order the school physician, the counselor, the attendance officer, and the family physician.

4 SINGLE AND COMPOSITE BASES OF GROUPING

The single basis in schools of different sizes.—Eighteen per cent of all schools use a single basis of grouping. (Fig. 25.) However, where a single basis is being used in one subject it is not necessarily the same as that being used in other subjects, even in the same school. Small schools with total enrollments of 51 to 100 are most given to the practice of grouping on a single basis. The reader will recall, from the discussion of Chapter III, Part I, that these five small schools are grouping pupils exclusively within the class section. These schools generally use teachers' marks in this or related subjects (basis 4) as the grouping criterion. For example, a pupil's previous marks in algebra, or possibly in arithmetic, might determine the group to which the pupil would be assigned in his algebra class during the ensuing marking period. Similarly the pupil's previous marks in Latin, or in English composition and grammar, might determine the pupil's group in his Latin class, and so on for his other subjects. The extent of use of a single grouping basis decreases as schools increase in size until total-enrollment group 501 to 750 is reached. In this group only 4 per cent of the grouping, or refined classification, is made on a single basis. The larger schools tend to return to a greater use of a single basis. In these schools, however, the single basis most commonly used is not teachers' marks but score, intelligence quotient, or classification index from a group mental test. However, even though these large schools report the use of a single basis it is clear from further study of their practice that necessary shifts are made later on the basis of

teacher's judgment aided by other criteria. Hence, the ultimate groups tend to resemble those of schools where many criteria of grouping are considered subjectively prior to making the individual pupil's schedule.

The preceding data show that schools using only a single basis of grouping are decidedly in the minority. Eighty-two per cent of all schools studied are using more than one, generally several, criteria to form a composite rather than a single basis of grouping.

Conjecturing the "best" composite basis.—Experience with grouping has demonstrated that when any single basis is used

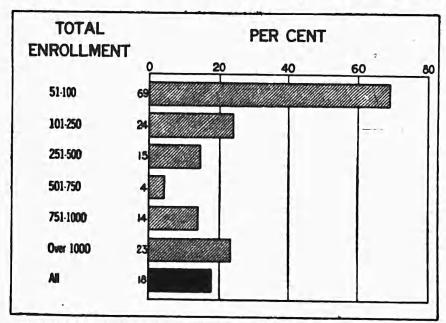


FIGURE 25.—The percentage of schools of each enrollment group using a single basis of grouping

many empirical transfers of pupils from one group to another are necessary. In other words, no single basis of grouping results in such unerringly refined classification that common sense aided by available objective data does not indicate needed changes.

Consequently, within the past decade the literature of grouping has been replete with mathematical attempts to develop a formula for grouping which will reduce misplacement to a minimum. The method of correlation unaccompanied by the controlled study of homogeneous groups has

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been used almost exclusively. Measures taken at one time on pupils in heterogeneous groups have been correlated with measures taken at another time on the same pupils still in heterogeneous groups. A fundamental fallacy of such procedure seems to be the tacit assumption that homogeneous grouping, if it had been practiced, would have had no effect upon the correlated measures.³ The assumption, even if it were true, would be inconsistent with an effort to predict a best basis of grouping. If the assumption were true, then why seek to group at all?

A second mathematical method of securing a composite score for grouping has involved the use of the standard deviation technique.4 Weights are arbitrarily assigned each component and the measures for each pupil are expressed in terms of standard deviations. They are then added to secure the composite score. This method has the advantage of being not only mathematically sound but also frankly empirical in the selection of bases. There is no presumption that a "best" basis has been selected. By means of controlled experiment it is possible to discover the advantages or disadvantages of the empirical criterion and if it is found valuable the technique is defined with sufficient objectivity that repetition of the grouping on approximately the same basis is This method has much to commend it. possible.

Prediction formulæ and standard deviation technique are not being used.—Since it is typical practice in these selected schools to use many bases rather than a single basis of grouping, it is a significant fact that not one school employs either a prediction formula or the standard deviation technique to secure a composite basis for refined classification. Only 64 of the 289 schools make use of any numerical composite as a basis for grouping. In these schools an empirical percentage weight is assigned each basis. No evidence was submitted to show that the weight assigned each criterion was derived from any source other than the best judgment of the person doing the grouping.

¹ See Billett, Roy O., op. cit., pp. 13-14.

⁴ Holzinger, Karl J. Statistical Methods for Students of Education. Boston, Ginn & Co., 1928. pp. 118-122. Kelley, Truman L. Statistical Method. New York, The Macmillan Co., 1923, pp. 114-117.

The typical number of bases used is three. (Table 23.) Fifty of the 64 schools use four bases or less. However, collectively these 64 schools make use of all bases of grouping included in this report, except results of prognostic tests. (Table 24.) The wide use of group mental tests, average scholarship marks, and teachers' ratings of intelligence in these 64 schools should be noted. The sum of the frequencies of use of these bases (1, 2, 3, 4, 7, and 8) is 153 as compared with a total frequency of 225 for all bases. intelligence quotient from the group mental test leads all other bases in frequency of use in these 64 schools. It is notably ahead of its nearest competitor, the average of Tratings of academic ability or intelligence by several teachers. It is not only used most frequently but when used it receives the greatest weight. (Column 4, Table 24.) Ratings of industry, application, or effort are used more frequently than educational or achievement test age or score. Prognostic tests are not used at all in these 64 schools and ratings of home environment are used but once. Only about one in eight of these schools uses ratings of health, social maturity, or physical maturity.

Table 23.—Distribution of 64 schools according to number of bases combined to form a mathematical composite as a basis for grouping

Number of bases in the composite	Numbe of schools	Number of bases in the composite	Number of schools
2	10		
3	28		
4	9		
5		7	
6		Total	64

Percentage weights assigned the various bases.—It has already been noted that the intelligence quotient from the group mental test where used is typically weighted heaviest (40 per cent). Score or mental age from the group mental test (basis 1) and educational or achievement quotient (basis 6) are given equal median weights of 33 per cent each. Bases given a typical weight of 25 per cent are: Average scholarship marks in all subjects combined (basis 3); average scholarship marks in this or related subjects (basis 4); educational or achievement test age or score (basis 5); teacher's rating of

pupil's academic ability or intelligence (basis 7); and the average of several teachers' ratings of pupil's academic ability or intelligence (basis 8).

Table 24.—The percentage weight assigned each of 17 bases of grouping in 64 schools reporting the use of a numerical weighting system to secure a composite grouping criterion

Basis	Total times used	Range of weight	dian
1	3	1	4
1. Group intelligence-test score or mental age 2. Intelligence quotient from a group mental test 3. A verage scholarship marks in all subjects combined 4. A verage scholarship marks in this or related subjects 5. Educational- or achievement-test age or score 6. Educational or achievement quotient 7. Teacher's rating of pupil's academic ability or intelligence 8. A verage of several teachers' ratings of pupil's academic ability or intelligence 9. Individual intelligence-test score or mental age 1. Intelligence quotient from individual test 1. Health 2. Industry, application, or effort 3. Social maturity 4. Physical maturity 5. Type of home environment 6. Score from a prognostic test 7. Chronological age Total	200 411 277 15 5 5 5 22 28 8 7 7 7 17 8 7 2 0 0 1	Per cent 5-00 5-00 5-50 10-90 10-60 5-50 5-75 5-15 5-50 5-15 5-80 5-15 5-80 40	Per cent 33 44 22 22 22 33 34 10 6 8 110 10 18 16 16 16 16 16 16 16 16 16 16 16 16 16

A wide range of practice prevails, however, in the weights assigned any basis as may be seen in Column 3, Table 24.

5. EXTENT TO WHICH EACH OF 16 BASES OF GROUPING IS USED IN 289 SCHOOLS

Possible combinations of 16 items.—Mathematically 66,529 different combinations of 16 items are possible. Therefore, the possibilities for the exercise of choice are wide. Moreover, the schools being studied intensively have exploited the possibilities sufficiently to justify the statement that with reference to bases of grouping used, no two schools are proceeding along identical lines. Any attempt to study quantitatively the numerous combinations of the 16 bases in use would result in data too attenuated to be meaningful. Therefore, in the pages which follow, percentage of use of a basis does not imply use unaccompanied by other bases unless it is expressly so stated.

Bases ranked according to frequency of use in all schools.— A study of all subjects in all grades of all schools shows that, of all 16 bases, the intelligence quotient from the group mental test is most frequently used. Alone or in combination with other bases it is the criterion of refined classification in 44.5 per cent of all homogeneous grouping in the 289 schools being studied. It is significant that average scholarship marks in all subjects combined ranks as a fairly close second and industry, application, or effort ranks third. Thus, the conflict in theory concerning the best basis of grouping 5 is paralleled by a conflict in practice. Unquestionably teachers' marks, and ratings of industry, application, or effort measure relatively changeable qualities. Most informed people would also agree that the intelligence quotient from a group mental test is at least relatively unchangeable. the three bases are widely used in schools selected to represent best prevailing practices in grouping.

Figure 26 practically tells its own story. Bases which are used in from about a fourth to more than a third of the grouping are: Average scholarship marks in all subjects combined (basis 3); industry, application, or effort (basis 12); average of several teachers' ratings of pupil's academic ability or intelligence (basis 8); score or mental age from a group mental test (basis 1); average scholarship marks in this or related subjects (basis 4); and educational or achievement test age or score (basis 5).

Bases used in from about a tenth to a sixth of the grouping are: Physical maturity (basis 14); health (basis 11); social maturity (basis 13); educational or achievement quotient (basis 6); intelligence quotient from an individual test (basis 10); score or mental age from an individual test (basis 9); type of home environment (basis 15); and score from a prognostic test (basis 16).

The small amount of use of the results of the individual intelligence test is not surprising. The amount of time and the degree of skill required for the administration and scoring of an individual test is such that it is seldom used except as a check upon the group mental test in those cases where the results of the latter test are for any reason open to doubt.

⁴ See sec. 1 of this chapter,

The slight use of prognostic tests in grouping is attributable largely to the recency with which serious attempts have been made to develop such tests. Needless to say, they offer much promise to those who seek greater refinement of classification. Undoubtedly, prognostic tests may be developed in the future which will show more, in from two to four hours' time, about a pupil's talents for work in a specific subject-matter field than a skilled teacher can discover during six weeks of actual experience with the pupil in the classroom. The extensive use of industry, application, or effort as a basis of grouping is seriously open to question if

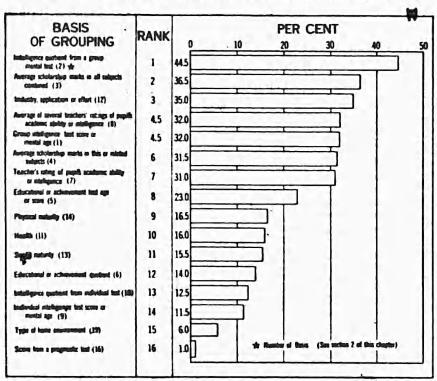


FIGURE 26.—Extent to which each of 16 bases of grouping is used in all subject-matter fields of 289 highly selected schools

motivation be regarded as one of the chief functions of the teacher.

Intelligence quotient preferred to mental age or score.— Because of the wide use of intelligence quotient and mental age or score from the group mental test, it should be said that of the 289 selected schools being studied 97 used intelligence quotient but not mental age or score; 50 were using

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mental age or score and not intelligence quotient; 54 were using both intelligence quotient and mental age or score. In these last-mentioned schools the intelligence quotient was generally used in grades 7, 8, and 9 and the mental age or score in grades 10, 11, and 12.

Differentiation of bases for individual subject-matter fields.—
To discover the degree of discrimination with which the several bases of grouping were being used in the individual subject-matter fields, the data were organized as in Table 25.
These data will be briefly summarized, each basis of grouping being taken up in the order shown in the table.

Score or mental age from a group mental test enters into the grouping criterion in physical education just as often as in any academic field. It reaches its minimum use in music and in art.

Intelligence quotient from a group mental test is used most in foreign language. However, this basis is used more in physical education (classroom and gymnasium) and in industrial and household arts than in mathematics, science, or social studies.

Average scholarship marks in all subjects combined is used more in English, foreign language, mathematics, and social studies than in any other fields. It is used as much in physical education (gymnasium), as in science.

Average scholarship marks in this or related subjects as compared with "average scholarship marks in all subjects combined" is used much less frequently in physical education (gymnásium), physical education (classroom), and industrial and household arts.

Educational or achievement test age or score is least used in physical education (classroom and gymnasium) and in industrial and household arts. In the nonacademic subject-matter fields it is most used in music and in art. Among the academic subject-matter fields it is most used in mathematics and least in social studies.

Educational or achievement quotient, while very little used in any subject-matter field is used more in physical education (gymnasium) and in commercial subjects than in any other fields.

TABLE 25.—Percentage of use of each of 16 bases of grouping in each of 11 subject-matter fields and in academic, nonacademic, and all fields, combined

•						er cer	Per cent of use of each base	e of ear	ch bas				h			Rank
Basis of grouping	English	Foreign lan- egang	Mathematics	Social studies	Belence	Commercial subjects	Physical edu- cation (gym- nasium)	Physical edu- cation (class- room)	Music	ħÅ	bas latusubal blodesiicd stra	Academic	Nonscademic	 пу	IIA Sendemic	
-	•	•	. •	•	•	7	•	•	2	=	2	22	2	2	91	
	83.0 #.0	22.0	32.5	31.5	31.0	32.0 49.0	27.0	525	25.5 2.5	\$ 5 5 5	32. 5 46. 5	32.5	22.2	32.0		9-1
	30. 6	40.5	40.8	40.0	34.5	87.8	34. 5	34.0	36. 5	34. 5	87.0	39.0	34. 6	36.5		2
4. Average scholarship marks in this or related guident scholarship marks in this or related to the scholarship marks in this or score. 4. Educational or achievement test age or score. 5. Educational or achievement quotient	24.4 2004	2,82 1,50 0,50	33.5 15.0 15.0	222 202	28 25 13.0 0.0	123.5	22.0 21.0 17.6	27.6 19.6 11.6	84: 020	28.2 2.5 2.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3	28.0 21.5 12.5	188.5 14.0	8 4 4 5 0 0 0	31.5 14.0	4 4 4	200
7. Teacher's rating of pupil's academic ability or inselligence	32.6	29. 5	32.0	2 2	31.0	26.6	0 %	36. 5	24.0	32. 5	87.0	30. 5	32.8	31.0		0 7.
A verage of gevera, teachers' ratings of puril, s accelerate ability or intelligence. Individual intelligence test some or mental age. Trianilly connected from individual age.	727	13.0		200		36.0					36.0 11.6				94.5	14.0
	38	22		250		2 to 2	200	25.5		10.0	30.00				00	00 00 00 00 00 00 00 00 00 00 00 00 00
. Physical maturity . Physical maturity . Type of home environment	5.50 0.00 0.00	2 2	44.0	5.5 0 5 5 0 5 5	4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	949	7.87.	420	44. 02.0	200	25.00 50.00	6.50	9 8 9 9 9 9 9	4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		9000
A Score from a prognostic test	1.0			0.6		0	•	•		0	0				e 0	0 16.0 16.

Teacher's rating of pupil's academic ability or intelligence is least used in physical education (gymnasium) and social studies. It is most used in industrial and household arts and in physical education (classroom). Its maximum use in the academic fields is in English—32.5 per cent, a figure which is equalled in art.

The average of several teachers' ratings of the pupil's academic ability or intelligence is used most in industrial and household arts and in commercial subjects. It is least used in physical and health education (classroom). Among the academic fields it is most used in English—34 per cent, an extent of use practically equalled by its extent of use in physical education (gymnasium). The extent to which this basis is used in gymnasium work exceeds the extent to which it is used in foreign language, mathematics, social studies, and science.

Score or mental age from an individual intelligence test is used in about an eighth (10 to 13 per cent) of the grouping in each subject-matter field. Practically no differentiation is in evidence.

Intelligence quotient from an individual intelligence test is used appreciably more in academic and commercial subject-matter fields than in the nonacademic fields. The differentiation is not great. Its maximum use is in English and in commercial subjects. Its minimum use is in physical and health education (classroom).

Health is used most in physical education (gymnasium). The next field in order of extent of use is music. In other fields the basis is used in about a sixth of the grouping.

Industry, application, or effort is used in each subjectmatter field in from about a third to nearly a half of the groupings. Its maximum use is in art. It is also used extensively in music, physical education (gymnasium), industrial and household arts, and in physical and health education (classroom). In the academic fields its maximum use is in foreign language.

Social maturity is used rather uniformly in about a sixth of the groupings in each subject-matter field. It is used most in physical education (gymnasium) and least in mathematics.

Physical maturity is used most in physical education (classroom and gymnasium). It is used with considerable



uniformity in about a sixth of the groupings in the other subject-matter fields.

Type of home environment is very little used in any subjectmatter field. Its maximum use is in physical education (gymnasium) and in social studies.

Score from a prognostic test is used in 1 per cent, or less, of the groupings in any subject-matter field. The extent of use approximates 1 per cent in English, foreign language, mathematics, science, and music. This basis is not used at all in physical education, art, or industrial and household arts. In commercial subjects it is used in 0.5 per cent of the groupings.

Implications of extents of use of the various bases in the various individual subject-matter fields.—The data summarized in the preceding paragraphs have the following implications: First, homogeneous grouping in practice has been introduced to provide for individual differences in the academic subjects. The bases employed in these subjects have carried over into the commercial and the other nonacademic subjects. no other way may one explain the obvious fact that the bases most extensively used in all fields are best adapted to the academic subject-matter fields. On the whole, the dissimilarities of practice with respect to the bases used in the academic, and commercial, and other nonacademic fields are trivial compared with the similarities. bases likely to be valuable in nonacademic fields, for example, results of mechanical aptitude tests, or of tests of physical efficiency, are very little used in those fields.

The 16 bases ranked in the academic and nonacademic subject-matter fields.—When the bases are ranked in the order of extent of use in the academic and nonacademic subject-matter fields (Columns 16 and 17, Table 25), the similarity of practice is brought out even more convincingly. For example, eight of the bases, namely, intelligence quotient from a group mental test (basis 2); educational or achievement test age or score (basis 5); educational or achievement quotient (basis 6); health (basis 11); social maturity (basis 13); physical maturity (basis 14); type of home environment (basis 15); and score from a prognostic test (basis 16) occupy precisely the same rank in both academic and nonacademic

fields. Four other bases, namely, score or mental age from a group mental test (basis 1); average of several teachers' ratings of pupil's academic ability or intelligence (basis 8); intelligence quotient from an individual test (basis 10); and score or mental age from an individual mental test (basis 9), vary by only half a rank.

Of the remaining four bases, average scholarship marks in all subjects combined (basis 3) varies by one place; average scholarship marks in this or related subjects (basis 4) varies by four places; teacher's rating of pupil's academic ability or intelligence (basis 7) varies by 2.5 places; industry,

application, or effort (basis 12) varies by 3.5 places.

The preceding data illustrate still further the rather indiscriminating use of bases of grouping in academic and nonacademic fields. On the one hand it is hardly reasonable to suppose that the two types of school work should be so similar that eight of the bases used should be equally favored in both fields. On the other hand, it is not easy to explain, first, why average scholarship marks in this or related subjects (basis 4) should rank third in point of use in academic subject-matter fields and seventh in point of use in nonacademic fields; or second, why teacher's rating of pupil's academic ability or intelligence (basis 7) should rank 4.5 in nonacademic subject-matter fields and 7 in academic subject-Finally, if industry, application, or effort matter fields. (basis 12), is to be used at all as a basis of grouping, why should it rank 2 in nonacademic fields and 5.5 in academic fields? Is effort less important in either field? explanation which the writer can offer is the one previously advanced, namely, that most of the schools studied have given no systematic attention to grouping in the nonacademic subjects.

TABLE 28.—Rank of each of 16 bases of grouping in each of 11 subjectmatter fields

		R	ank	accor	ding	to e	rten	t of t	18e i	n-	
Basis of grouping	English	Foreign language	Mathematics	Social studies	Belence	Commercial sub-	Physical education (gymnastum)	Physical education (classroom)	Music	Art	Industrial and household arts
1	2	3	4	8		,	8		10	11	13
Group intelligence-test score or metal age. Intelligence quotient from a group mental test A verage scholarship marks in all sub-	5	5	4	6	5	6	3	3	7	7 2	6
jects combined. 4. A verage scholarship marks in this or related subjects	3	2	2 3	2 3.5	2.5			5	3 5	3	2.5
Educational or achievement test age or score. Educational or achievement quotient. Teacher's rating of pupil's academic	8	8	8	8 12 5	8 12	8	8 11. 5	9 12	8 13 ,	8	8
a bility or intelligence. 8 A verage of several teachers' ratings of pupil's academic ability or intelligence.	6	7	5.5		5	7	6	3	4	5	2.5
Individual intelligence-test score or mental age Intelligence quotient from individual	14	14	14		7 14	14	5 13	13.5	_	6 12.5	5 14
test 11. Health 12. Industry, application, or effort 13. Social maturity 14. Physical maturity 15. Type of home environment 16. Score from a prognostic test	10. 5	12	9 7	10. 5 9 15	11 5		9. 5 2 11. 5 9. 5 15	15	9	12 5 10 1 9 11 15	13 11 4 9.5 9.5 15

Variation of rank in the individual subject-matter fields.—
Two bases, type of home environment (basis 15), and score from a prognostic test (basis 16), rank uniformly 15 and 16 in each of the 11 subject-matter fields. (Table 26.) Intelligence quotient from a group mental test (basis 2), ranks uniformly first in 10 of the 11 subject-matter fields. It ranks 2 in art. Educational or achievement test age or score (basis 5), ranks 8 in each field except physical or health education (classroom) where it ranks 9. The ranks of the remaining bases show more or less fluctuation. Score or mental age from an individual mental test (basis 9), ranges through 2.5 ranks (12.5 to 14). Intelligence quotient from an individual mental test (basis 10), ranges through 3.5 ranks (11.5 to 14). Average scholarship marks in all sub-

jects combined (basis 3), and average of several teachers' ratings of pupil's academic ability or intelligence (basis 8) range through 4 ranks each (2 to 5 and 4 to 7). Score or mental age from a group mental test (basis 1), and health (basis 11), each range through 5 ranks (3 to 7 and 9 to 13). Average marks in this or related subjects (basis 4), and teacher's rating of pupil's academic ability or intelligence (basis 7), each ranges through 5.5 ranks (2.5 to 7 in each

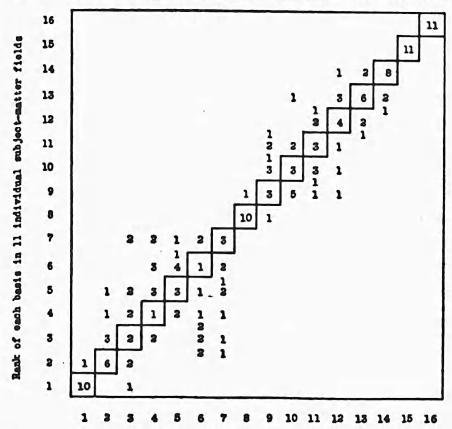


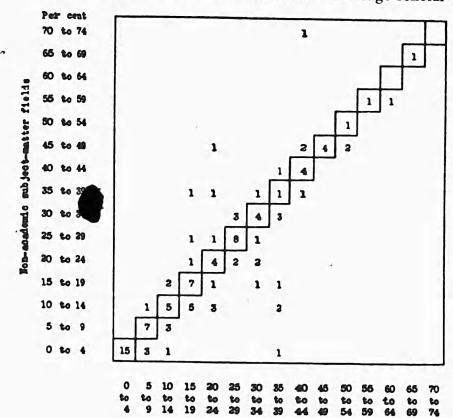
FIGURE 27.—Scattergram showing the extent to which each basis of grouping tends to occupy the same rank in the individual subject-matter fields which it occupies in all subject-matter fields combined (bases listed on horizontal axis in same order as in Fig. 26)

Sixteen bases of grouping, all subject-matter fields combined.

case). Educational or achievement quotient (basis 6), ranges through 6 ranks (9 to 14). Industry, application, or effort (basis 12), ranges through 7 ranks (1 to 7).

The foregoing facts are summarized in Figure 27. On the horizontal axis of this scattergram the 16 bases of grouping are arranged in the rank order of extent of use in all fields

combined. (See Fig. 26 for rank order of the 16 bases according to extent of use.) Along the vertical axis the frequency is indicated with which each basis occupies the same rank in individual subject-matter fields which it occupies in all fields combined. Read Figure 27 as follows: "Intelligence quotient from a group mental test" ranked 1 in all fields combined. It also ranked 1 in 10 of the individual subject-matter fields and 2 in 1 individual field. "Average scholar-



Academic subject-matter fields

FIGURE 28.—Scattergram showing extent to which each basis of grouping used in academic subject-matter fields tends also to be used to the same extent in nonacademic fields. (r= 0.88±0.01)

ship marks in all subjects combined" ranked 2 in all subjectmatter fields combined. It also ranked 2 in 6 individual subject-matter fields; 3 in 3 fields; 4 in 1 field; and 5 in 1 field.

Correlation of percentages of use of the 16 bases in academic and nonacademic fields.—The actual percentages of use of

⁶ Tied ranks not shown in the figure.

each basis of grouping in the academic subject-matter fields in seven types of schools according to grades included were plotted on the horizontal axis of Figure 28 and the corresponding percentages of use in the nonacademic fields on the vertical axis. The computed coefficient of correlation was 0.88 ± 0.01 which shows again that not only the same bases tend to be used in academic and in nonacademic fields but that the extent of use is much the same in both fields.

8. GEOGRAPHICAL AREAS AND THE USE OF THE SEVERAL BASES

The nine most frequently used bases.—A detailed comparative study was made of the extent to which the schools of each State are using each of the nine most frequently used bases—as listed in Figure 26. The findings are not presented graphically because similarities in the extent of use of the various bases in different geographical areas are much more in evidence than differences. For example, the schools reporting from California, Colorado, Illinois, Indiana, Iowa, Kansas, Massachusetts, Nebraska, New York, North Carolina, Ohio, and Pennsylvania are alike in that they are using, to some extent at least, each of the nine bases. Their chief differences inhere in the extent to which "industry, application, or effort" is used as a basis of grouping. This basis is used in not to exceed a fourth of the grouping done by the schools reporting from the following States: California, Colorado, Illinois, Indiana, Kansas, Nebraska, and Ohio. Schools reporting from Iowa and Pennsylvania use the basis in from a fourth to a half of their grouping, while schools reporting from New York and Massachusetts use it in from a half to threefourths of their grouping.

Schools reporting from Missouri are characterized by (1) the wide use of group mental tests, intelligence quotient and mental age or score being used in from a half to three-fourths of their grouping, and (2) no use at all of educational or achievement tests for the purpose of homogeneous grouping. The second tendency is true also of Alabama, Arizona, District of Columbia, Florida, Georgia, Kentucky, New Mexico, North Dakota, South Dakota, Utah, Vermont, Washington, and Wyoming.

The essential finding.—Many further specific comparisons are possible but not profitable. The essential finding is that, in general, even the widest differences between States in the extent to which the various bases of grouping are being used are not much greater than the differences between the individual schools of any given State from which a fairly large number of returns was received.

7. RELATION OF TOTAL ENROLLMENT TO EXTENT OF USE OF EACH BASIS

Essential findings.—The extent to which each of 16 bases of grouping (as listed at the beginning of this chapter) is used in the academic, nonacademic, and commercial subjectmatter fields, in schools of each total-enrollment group, is shown in Table 27. The use of the intelligence quotient from a group mental test (basis 2) increases as the total enrollment increases (Column 3, Table 27). Schools with total enrollments of 51 to 100 are leaning heavily on average scholarship marks in this or related subjects. Column 5.) The only other bases used extensively by these smallest schools are teacher's rating of pupil's academic ability or intelligence (basis 7, Column 8) and industry. application, or effort (basis 12, Column 13). With the preceding exceptions, the predominating tendency, as shown by inspection of the data of Table 27, is for schools of all sizes to use each basis of grouping to about the same extent.

27.—Extents to which schools of different sizes use each of 16 bases of grouping in academic, nonacademic, and commercial subject-matter fields. (Extents expressed in percentages of the total amount of grouping in the respective fields)
ACADEMIC SUBIECT-MATTER FIELDS

							Be	Bases of	of grouping							i
Enrollment group	1		00	•	10	0	-		•	10	=	13	13	2	16	9
	•	•	•	•	•	-		•	2	=	3	2	12	2	2	2
Bi to 100. 101 to 200. 201 to 200. 201 to 500. 201 to 750. All to 1,000. Mosan. A verage deviation.	. 228822.	2548284.	04844120	25 28 28 28 28 28 28 28 28 28 28 28 28 28	-822824°	\$228255 \$25	2853225°	0828888 0	oŭ+äääää.	04225220	0855835	######################################	0828234	- STEE 55.	841888210	0000
ON	NONACADEMIC	ADE		UBJE	SUBJECT-MATTER	TTE		FIELDS								
61 to 100 101 to 250 251 to 600 251 to 600 251 to 750 751 to 1,000 More than 1,000 Average deviation	-\$25 \$25°	0522283 ²	12.02.25	Carraras.	Lassess.	0022-8025	2831882°	02782882	o548825€	08475588	28838335	81281813	0.2522520 0.2522520	0228225	00000000	9000
00	COMMERCIAL	ERCL		BUBJECT-MA	T-MA	TTER		FIRLDS								
61 to 100. 101 to 250. 881 to 500. 801 to 750. 751 to 1,000. Mone than 1,000. Average deviation.	7881888 ⁴	7238824°	0 8 8 8 4 8 8 8 5 c	8222222	C2822823	08228228	77818120	-242282°	02492515	04.05820	0821585	-2888885°	0208:25°	02-8222	0000000	000000-

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Bases emphasized in schools of various sizes. The extents to which schools of various sizes are emphasizing the several bases are shown graphically in Figure 29. The criterion of emphasis is the average deviation. A plus sign in the figure means that the given total-enrollment group is employing a given basis to an extent which exceeds, by more than one average deviation, the average use of the basis in all sizes of schools. A minus sign in the figure means that the given total-enrollment group is employing a given basis to an extent which falls below the average by more than one average deviation. An N signifies that the given totalenrollment group is using a given basis to an amount normal for all groups; that is, an amount neither above nor below the average of all groups by so much as one average deviation. With the above definitions, Figure 29 should be selfexplanatory. For example, in the academic subjects schools with total enrollments of 51 to 100 are stressing average scholarship marks in this or related subjects (basis 4), and are employing teacher's rating of pupil's academic ability or intelligence (basis 7), and industry, application, and effort (basis 12) normally. These schools are plainly avoiding the extensive use of all other bases as is shown by the minus signs. Schools with total enrollments of 101 to 250 are making normal use of most bases and are emphasizing social maturity (basis 13). Schools with total enrollments of 251 to 500 are making normal use of most bases and are stressing the average of several teachers' ratings of pupil's academic ability or intelligence (basis 8), and score from a prognostic test (basis 16). Schools with total enrollments of 501 to 750 are making normal use of 10 bases and are emphasizing 5 bases, namely, educational or achievement test age or score (basis 5); teacher's rating of pupil's academic ability or intelligence (basis 7); industry, application, or effort (basis 12); social maturity (basis 13); and physical maturity (basis 14). Schools with total enrollments of 751 to 1,000 are using 12 bases to a normal degree and are emphasizing four bases, namely, educational or achievement quotient (basis 6), individual intelligence-test score or mental age (basis 9), health (basis 11), and type of home environment (basis 15). Schools of

total enrollment of more than 1,000 are employing 12 bases to a normal extent and are emphasizing 3, namely, intelligence quotient from a group mental test (basis 2),

## ## ## ## ## ## ## ## ## ## ## ## ##	matter									2000	3	STORES OF	F						
251.—500	210148	Chod	-	60	60	4	9	9	6	80	6	9	11	27	13	14	16	16	
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teacher's rating of pupil's academic ability or intelligence (basis 7), and intelligence quotient from an individual test (basis 10).

Further interpretations are possible for the commercial and other nonacademic fields. Careful study of all enrollment groups in all three types of subject-matter fields shows that schools with total enrollment of more than 1,000 are following what logically appears to be the most consistent and simplified practice. In both academic and commercial fields these schools are emphasizing three bases, namely, bases 2, 7, and 10, mentioned in the preceding paragraph. In the nonacademic fields only score from a prognostic test (basis 16) is being stressed.

Summary.—In general, the smallest (51 to 100) and the largest (more than 1,000) schools are definitely committed to policies of grouping which stress a few bases. Schools with enrollments of 251 to 500 also seem to be concentrating upon one basis only. The other enrollment groups are characterized by more extensive emphasis upon several bases.

8. RELATION OF TYPE OF ORGANIZATION TO EXTENT OF USE OF EACH BASIS

Presentation and interpretation of data.—To show the relation of type of organization to the extent of use of each basis of grouping, exactly the same method has been employed as in the preceding section dealing with total enrollment and the extent of use of each basis. In Table 28 recorded the actual percentages of use of each basis each type of school classified according to grades included. Figure 30, based upon the data of Table 28, may be used for purposes of interpretation. The outstanding fact is that schools including grades 7 to 9, are by far the most active of all types in emphasizing many bases of grouping, 12 bases being stressed by these schools in the academic fields, 10 in the nonacademic fields, and 7 in the commercial fields. Schools including grades 7 to 12 are using 14 bases to a normal degree and are stressing two, namely, bases 5 and 7. Schools including grades 10 to 12 are using nine bases to a normal degree and are stressing bases 4 and 11. Schools including grades 9 to 12 are using 12 bases to a normal degree but are emphasizing none. Schools including grades 6 to 11 are using 5 bases to a normal degree and are stressing bases

3, 7, and 12. Schools including grades 8 to 11 are using 6 bases to a normal degree and are emphasizing basis 16. Finally, the miscellaneous "All others" group are employing 7 bases to a normal degree and are stressing basis 8. Thus, they are again second only to schools including grades 7 to 9. The reader will recall that this miscellaneous group of schools includes predominantly the early grades of the secondary school and possesses many characteristics of reorganized schools.

Table 28.—Extents to which schools of different types of organization use each of 16 bases of grouping in academic, nonacademic, and commercial subject-matter fields. (Extents expressed in percentages of total amounts of grouping in the respective fields)

ACADEMIC SUBJECT-MATTER FIELDS

Torse of presentestion							BB	Bases of grouping	dnoz	29						
	-	2	60	+	10	9	-	œ	•	10	=	12	13	4	15	16
-		•	•	•	•	-	30	•	=	=	22	=	2	2	2	12
7 to 9. 7 to 12. 10 to 12. 9 to 13. 6 to 11. 8 to 11. Mean. Average devistion.	224288884°	82288828.	7.1-1-63-63-8-52	8. 3.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.	8222280	25.05.28.29.00	22828282	25%58%7%°	8-0.0018114	8202025	25 2 1 0 1 1 2 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	\$85812E87	250 m 21 5 51 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	87.008.085.	42020012	8-00000
NO	NAC	NONACADEMIC SUBJECT-MATTER	ıc sı	BJEC	T-M	TTE	R FIE	FIELDS								İ
7 to 9. 7 to 12. 10 to 12. 9 to 12. 6 to 11. 8 to 11. All others. Average deviation.	2 \$ \$ 5 1 8 8 8 5 4 . II	84488340.01 0.01	24 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 8 8 8 8 8 8 4 4	228020224	27500025824	~%%%%%%%	12.885 53.82 6.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00	4 manom 800	. 42000 c 20 c 20 c 20 c 20 c 20 c 20 c 2	822105550	3828828 828828 8288	¥000000510	31 110 100 100 100 100 100 100 100 100 1	400400E08	0-0000-#+

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81 52 p 83 5 8.
22 0 0 0 2 5 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
22 23 18 20 70 13 6
22 22 0 0 0 0 E E . 8
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30 00 10,7 10,7
858853780
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25 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
22284428 <u>2</u>
x2384422°
44878548°
7 to 9 7 to 12 9 to 11 10 thers All others A warage deviation

COMMERCIAL SUBJECT-MATTER FIELDS

[123]

	natter Type of or-								Bases of grouping	of G	ouple.	y					
£1014s	gant sation	~	3	8	•	0	9	-		0	2	=	2	=	13	1	
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	7-12		- 9				. 1		+ 1	+ 1	+ 1	+	+	+	+	+	-
					•	+		+	-	-	-	-	-	=	=	=	
	75	-	-	,	+	-	1	-	=	=	1	+	1	=	1	1	1
	212	•	-	•	-	1	-	-	1	*	-	100			-		
	611	-	1	+	1	-	-	+	1				1	,			
	8-11	,	1			1	-				4		- 1		•		
	Wiscellan-											•		1	1	1	+
	Sure	-	-	*	-	+	+	4	4	4	-		,				
	Arerage	2	\$	4	R	S.	16	B	13	1	15	2	9	12	+ 5	+ 10	1 0
	Arerage												1			,	,
	deviation	8.3	11.6	7.1	8.6	10.0	6.0	6.7	9.6	6.4	6.6	5.7	7.7	7.9	8.1	4.6	1.6
Commer-	7 8	-	+	-	1	+	-	-	-	+		1		[
1910	7-13	-	=	+	-	+	-	+	-	-	-	-		-	- 1	- 8	
	10-12	+	H	i	+	*	1	-	-	-	. 1	1					. 1
	212	1		1	-	-	1					- 10		. 1	. 1	, ,	= 1
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	6-11		1	-			. 4		. ,	1		1		•	4	1	-
	Miscellan-									1	+	1	+	ı	1	1	4
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	Arerage												,	1	:	,	,
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+==== 1	+9	8.6
+ = = = 1	+4	0.6
mm m+m	h g	12.3
+=+=1=	ng	8.9
+=====	#g	7.3
+===	+9	0.4
++=111	+8	12.6
	+#	5,1
**!!*	+22	4.4
++= =	¤ g'	9.4
[m+m]m	# 00 m	10,4
++====	× 10	10.4
	#5	10.9
m++11m	= 13	11.4
2 4 4 5 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Arerage Arerage	deviation 11,4 10,9 10,4 10,4 10,4 9,4 4,4 5,1 12,6 7,0 7,3 5,9 12,3 9,0 9,3 4,6 0,4
academic		

FIGURE 20.—Relative emphasis placed on each basis of grouping in academic, commercial, and other nonacademic sub-lect-matter fields in each type of school as classified according to grades included (key same as for Fig. 29, see text)

Essential findings.—Therefore, the data of Table 28 and Figure 30 serve principally to show the emphasis which schools including grades 7 to 9 and the miscellaneous "All others" group are placing upon many bases of grouping in the academic, commercial, and other nonacademic subjectmatter fields. Schools including grades 9 to 12 or grades 8 to 11 show the least tendency of all types to emphasize any bases of grouping in either academic, commercial, or other nonacademic subject-matter fields.

9. SUM MARY

In this chapter the following facts have been established. First, the 289 schools selected for intensive study are using 16 different bases of grouping in a wide variety of combinations. No two schools are proceeding along identical lines so far as bases used are concerned.

Second, rating scales are the usual source of data in connection with the following subjective bases: (1) Teacher's rating of pupil's academic ability or intelligence; (2) average of several teachers' ratings of pupil's academic ability or intelligence; (3) health; (4) industry, application, or effort; (5) social maturity; (6) physical maturity; and (7) type of home environment. However, the data pertaining to these bases frequently are not expressed quantitatively. The responsibility for all ratings rests heaviest upon the teacher and the principal, next in order upon the school nurse, then upon the school physician, counselor, attendance officer, and family physician.

Third, 18 per cent of the 289 schools use a single basis of grouping. The smallest schools tend toward the exclusive use of teachers' marks as a single basis, and the largest schools toward results from group mental tests.

Fourth; although 82 per cent of the schools are using composite bases of grouping, none of them is using a prediction formula or the standard deviation technique. Sixty-four schools employ empirical percentage weights to secure a composite criterion to be used as a basis for grouping.

Fifth, of all 16 bases of grouping employed in these schools, the intelligence quotient from a group mental test is the



most widely used. Average scholarship marks in all subjects combined ranks second, and industry, application, or effort ranks third. The score from a prognostic test ranks at the bottom of the list in the extent of use.

Sixth, generally speaking, homogeneous grouping has been introduced to provide for individual differences of pupils in the academic subjects. The bases employed in the academic subjects have carried over into the commercial and other nonacademic fields. Consequently, the practice of grouping in the nonacademic subjects often appears aimless or illogical.

Seventh, the widest differences between States, in the extent to which the various bases of grouping are being used, are not much greater than the differences between the individual schools of any given State from which a fairly large number of returns were received.

Eighth, in general, the smallest and the largest schools are committed to policies of grouping which stress a few bases. Schools with enrollments of 251 to 500 also are tending to concentrate upon one basis only. The other anrollment groups are emphasizing several bases.

Ninth, schools including grades 7 to 9 and the miscellaneous "All others" group are stressing many bases of grouping. The least tendency to emphasize any particular basis is shown by schools including grades 9 to 12 or grades 8 to 11.



⁷ Since mental age or score from a group mental test is also widely used, it follows that results of the group mental test in one form or another assume a position of outstanding importance among criteria for forming homogeneous groups.

CHAPTER V: OTHER ASPECTS OF HOMOGENEOUS GROUPING

1. FURTHER ESSENTIALS OF PRACTICE

In Chapter III, Part I, the extent to which 289 highly selected schools are employing homegeneous grouping, was considered at some length. In Chapter IV, Part I, the facts pertaining to the criteria on which grouping is based, were offered. Facts will be presented now dealing with other important aspects of grouping. So far as the schools being studied intensively are concerned, the facts have been organized to answer the following questions:

- 1. How is each pupil's classification level determined?
- 2. To what extent is class size varied for the different homogeneous levels?
 - 3. How are class sections formed?
- 4. What is the practice with respect to transferring pupils from one classification level to another?
- 5. How often are all pupils reorganized into new homogeneous groups?
- 6. To what extent are courses and curriculums modified for the different levels?
- 7. To what extent is teaching procedure modified for the different levels?

2. DETERMINING EACH PUPIL'S CLASSIFICATION LEVEL

Varying procedures.—The group to which a pupil is assigned is determined in part by the nature of the data composing the grouping criterion and in part by the relative weights assigned each component. It is further influenced in devious ways by the vagaries of personal judgment, since some or all of the data usually are handled subjectively. Three rather distinct procedures for determining a pupil's initial classification are followed.

First, a pupil's place in the order of refined Cassification may depend upon a single measure numerically expressed. This may be a score earned on a mental or achievement test, or it may be a mark in a given subject taken during a preceding interval of time. Again it may be the numerical

average or weighted composite of two or more such marks or scores. Finally, it may be the numerical composite resulting from the arbitrary assignment of a percentage weight to each of several bases which individually may or may not have been expressed numerically. Assuming that the range for each homogeneous level has been decided upon, when this numerical measure is obtained the pupil's classification level is automatically determined. If any shifts from this classification level are made they occur after classes have been in session long enough for gross errors to become apparent to the teacher.

Under the second procedure the pupil's classification level is only tentatively determined by the numerical measure. Prior to the preparation of the pupil's schedule, other data. regarded as significant for the pupil's final classification, are studied. As a result certain pupils are shifted to levels higher or lower than those indicated by the numerical criterion. The procedure varies from practice which is highly systematic and objective to that which involves a large measure of subjectivity. The numerical criterion against which the other data are checked is most frequently the score or intelligence quotient from a group mental test. data usually pertain to health, social maturity, physical maturity, type of home environment, or accomplishment in various subjects as measured by teachers' marks.

The third procedure differs from the second primarily in the omission of the tentative numerical criterion. each pupil are collected, covering sometimes all 16 bases listed in Chapter IV, Part I. These data are studied and a judgment is rendered to the effect that the pupil probably will do his best work in a certain homogeneous group which may be designated as X, Y, or Z; 1, 2, or 3; or by some other sym-The method is extremely subjective but is frequently

employed.

Obviously, either the second or third-procedure leaves much to the genius and insight of the individual or committee using it.

Centralized and decentralized responsibility for determining each pupil's classification level.—The function of deciding upon each pupil's classification level is one of fundamental

importance. In practice it is most highly decentralized in the smallest schools of total enrollment 51 to 100. (Table 29.) In 80 per cent of these schools it is a function delegated to the classroom teacher, a logical allocation, since homogeneous grouping in the smallest schools is limited to grouping within the class section.

TABLE 29.—Percentages of 289 schools of various total enrollments having centralized and decentralized agencies of classification

	Ag	ency		Ag	ancy
Enrollment group	Each teacher for her own classes	Some cen- tral agency for entire school	Enrollment group	Each teacher for her own classes	Some cen- tral agency for entire school
51 to 100. 101 to 250. 251 to 800.	80 32 21	20 68 79	501 to 750	15 19 9	85 81 91

On the other hand, the responsibility for determining the pupil's classification level is highly centralized in the largest schools of total enrollment of more than 1,000. In ninetenths of these schools it is the function of a central committee which may consist of one or several persons.

A compromise between centralization and decentralization is maintained in some of the larger schools where the duty under discussion is performed by supervisors for their subject-matter fields or by the department heads for their respective departments.

In practically all schools where a central committee is employed to determine the classification level of individual pupils the committee consists of the principal usually assisted either by members of the teaching staff, administrative or clerical help, assistant or vice principals, the director of research, or the guidance department. Others occasionally charged with full responsibility for classifying the pupils of the entire school are: The research or measurements department, the guidance department, examiners, deans, or registrars.

Usually the function is centralized in each type of school according to grades included except in schools including grades 8 to 11. (Table 30.) Central agencies of classification



are maintained in more than 90 per cent of the schools including grades 7 to 9, and of schools of the miscellaneous "All others" type; in 75 per cent or more of the schools including grades 9 to 12 or grades 10 to 12; and in more than 50 per cent of the schools including grades 7 to 12 or grades 6 to 11. On the other hand, the decentralized plan is used in more than half the schools including grades 8 to 11. Thus, the central

TABLE 30.—Percentages of schools of different types of organization having centralized and decentralized agencies of classification

	As	ency		Agency		
Type of organization	Each teacher for her own classes	Some cen- tral agency for the entire school	Type of organization 7 to 12	Each teacher for her own classes	Some cen- tral agency for the entire school	
7 to 9	8 14 25	92 86 75		33 40 60 4	67 10 96	

agency of classification is predominant in those types of schools shown by the data of preceding chapters to be using homogeneous grouping most extensively. It is profitless to conjecture whether the central agency is the cause of the extensive grouping program or the extensive grouping program has necessitated a central agency.

S. ARRANGING CLASS SIZE

Theory compared with practice.—In the formation of homogeneous class sections the policy of the school with respect to class size must be considered. However, the factors which determine the pupil-teacher ratio for the entire school are not matters of concern in this report. Regardless of the typical class size which may be adopted for the entire school, educationists have advocated on theoretical grounds smaller classes for the slow and larger classes for the more capable. To what extent is this theory paralleled by practice?

Size of class for slow, average, and fast groups.—The preceding question is answered by the following facts: The median numbers of pupils enrolled in the slow, average, and fast sections, respectively, are 26.7, 32.3, and 34.6; that is, the

median class section for the lowest level contains five or six fewer pupils than the median class section for the middle level, and eight fewer pupils than the median class section for the highest level. (Columns 2, 4, and 6, Table 31.) Forty-one per cent of all slow groups are in class sections of 24 or fewer pupils. By way of contrast only 19 per cent of the average groups and only 6 per cent of the fast groups are in class sections of 24 or fewer pupils. At the other end of the distribution it appears that 3 per cent of the slow groups, 10 per cent of the average groups, and 15 per cent of the fast groups are in class sections of 40 or more pupils. In the formation of class sections for pupils of varying homogeneous levels a definite effort appears to be made to schedule fewer pupils to the slow sections than to the average sections.

TABLE 31.—Typical number of pupils per class section for slow, average, and fast groups, and typical number per class section for the entire school

	Slow		Average		Fast		Entire school	
Class size	Fre- quency	Per	Fre- quency	Per	Fre- quency	Per	Fre- quency	Percent
1		8	4		•	7	8	,
Fewer than 15	7 26 57 57 50 16 6	3 12 25 26 28 7 3	4 1 14 54 74 47 21	2 0 7 25 34 22 10	4 3 6 28 74 70 33	2 1 3 13 34 32 15	1 15 63 79 48 20	0 0 7 28 35 21
Total Median	219 26. 7	100	215 32.3	100	218 34.6	100	227 31. 2	100

4. FORMING CLASS SECTIONS

An illustration.—The three procedures for determining a pupil's classification level (already described under sec. 2) influence greatly the methods to be employed in the formation of class sections. Under the first or second procedure for determining a pupil's classification level, a numerical criterion is used, as was explained in section 2 of this chapter. Pupils' scores range in a continuous series. Therefore, the lowest and the highest levels must be defined more or less arbitrarily

in terms of a range of scores. Three distinct ways of accomplishing this delimitation are being used. (Table 32.) In the illustration 270 pupils are enrolled in a given grade and subject. The lowest measure on the grouping criterion is 68, the highest 144. The range of the middle third is 90 to 110. The typical class size for the entire school is 30.

TABLE 32.—Illustrating three ways of sectioning 270 pupils in a given subject or grade by means of a numerical grouping criterion

First method		Become	d method	Third method		
Number of class sections	Range of class scores	Number of class sections	Range of class scores	Number of class sections	Range of class scores	
1			4		- 6	
3	68-69	1	68-76	1	68-93	
3 3 3	90-110 111-144	1	77-83 84-89	1 2	78-103 88-113	
	***********	į	90-97 98-102 103-110	2	98-129 108-133	
		1	111-118 119-130		118-144	
*******		1	181-144	*********		
9		9		9		

One way of determining the ranges of measures for the various class sections.-By the first method the range of measures, for any class section of a given level, is that of the corresponding one-third of the total distribution, or in this particular instance, 68 to 89 for a slow section, 90 to 110 for an average section, and 111 to 144 for a fast section. In other words, the person doing the grouping decides that the heterogeneity of each class section, so far as the grouping criterion is concerned, shall be approximately one-third that of the entire distribution.1 If there is to be no differentiation of class size for the different levels, nine sections will be formed, each consisting of 30 pupils. Three of these will be slow sections ranging approximately from 68 to 89 on the grouping criterion; three will be average sections ranging approximately from 90 to 110; and three will be fast sections ranging approximately from 111 to 144. (Table 32.) In case fewer pupils are to be scheduled to each slow section and more pupils to each fast

¹ This would be more nearly approximated if the range of the total distribution, rather than the number of pupils, were divided into thirds.

section the 90 pupils of the lowest third will be scheduled in four class sections, each consisting of 22 or 23 pupils and each ranging approximately from 68 to 89 on the grouping criterion; and the 90 pupils of the highest third will be scheduled in two class sections, each consisting of 45 pupils and each ranging approximately from 111 to 144 on the grouping criterion.

A second way of determining the ranges of measures for the various class sections.—By the second method, if the nine class sections are to be equal in size the person doing the grouping merely counts off 30 pupils from say the lower end of the distribution. These pupils form the slowest class section, in this instance, ranging on the grouping criterion from 68 to 76. The next 30 pupils, with classification score ranging from 77 to 83 make up the second slowest class section, and so on until the nine class sections are formed. Class size is easily varied by counting off fewer pupils for each class section in the lower part of the distribution and more pupils in the upper part.

With respect to the grouping criterion the second method secures greater homogeneity than the first. The most homogeneous sections, however, are obtained near the middle of the distribution as by the first method.

A third way of determining the ranges of measures for the various class sections.—Under the third method a definite range is decided upon which shall be constant for each class section. In the illustration (Table 32) this range is 26 points. While there is considerable freedom in the selection of a constant range, nevertheless, limits are set partly by the number of pupils available and partly by the class size desired. The entire procedure is, of course, empirical. Only one of the 289 schools being studied is using this method.

With the present distribution the desired range is obtained by selecting 30 pupils whose scores range from 68 to 93, another 30 whose scores range from 78 to 103, and so on. This results in class sections which overlap in a definite way. For example, in the present instance the consecutive class sections overlap by a constant amount of 16 points (68 to 93, 78 to 103, etc.). Moreover, the alternating class sections overlap by six points. For instance, a pupil whose grouping

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criterion was 88 to 93 might be placed in the first, second, or the third class section. Those using this method claim that it produces a desirable mixture of slow and average or average and fast pupils while avoiding the extremely wide range prevailing in chance groupings. In the present case the possible range obtained from chance grouping is 68 to 144, or 77 points.

Results of the various methods.—The third method stabilizes the range from class section to class section more than either the first or second method. Under the first method the range of the middle third is invariably less than the range of either the lowest or highest third, and under the second method the class sections formed near the middle of the distribution will have a narrower range than sections of the same size formed at either end.

The third procedure 'for determining a pupil's classification level as related to formation of class sections.—The third procedure for determining a pupil's classification level (described under sec. 2 entitled "Determining where each pupil belongs") involves no numerical criterion. After careful study of the data the person doing the classifying decides that the pupil is fast, average, or slow; an X, a Y, or a Z; an 81, 82, or 83; or what not, depending upon the terminology employed. Within a given level pupils are undifferentiated and class sections may be formed immediately, due respect being given to the accepted policies of the school concerning class size for the different levels.

S. ACCURACY OF PLACEMENT AND CAUSES OF TRANSFER

The ideal and the practical.—It is one thing to assign each pupil a classification index, to establish a policy with respect to class size, and to set up a certain degree of heterogeneity as the standard for each class section. It is another thing to realize these ideals completely in the daily schedule. Most program makers readily concede that the ideal is only approximated in practice. But they are not reaching for the moon. They have no sighs for the unattained. They seem quite uniformly convinced that they do secure a reduction of heterogeneity, a refinement of classification which



Do not confuse with the "third way of determining the ranges of measures for the various class sections," previously mentioned.

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results in an improved educative environment. Instead of deploring the misplacement of the few, they take pleasure in the better placement of the many. They face what to them is a service problem, and not a problem of controlled experimentation. They feel that expediency must be reckoned with. They must weigh the possible advantages of completely accurate placement against the disadvantages which must be endured, and the concessions which must be made, to secure it. On the one hand, they do not minimize the importance of accurate placement nor reduce their efforts to secure it. On the other hand, in the practical situation few administrators are obsessed with the Utopian notion that a perfect homogeneity can or must prevail.

The extent of misplacement and transfer.—The extent to which some misplacement is necessary varies with the size of the school and the nature of the grouping criterion. Two hundred and forty-four of the 289 schools find some misplacement unavoidable. The amount of misplacement, reported by schools which keep such records, varies from 1 to 10 per cent of the total enrollment with the median at 3 per cent. The degree of misplacement is greatest in small schools and least in the largest schools. No essential differences are noted for schools classified according to grades included.

Most schools do not keep a systematic record of either misplacement or transfers. (Table 33.) Some have discontinued such a record after trial as a task which does not justify the labor entailed. Thirteen per cent of the largest schools (total enrollment of more than 1,000) and 43 per cent of the smallest schools which do any grouping into class sections (total enrollment 101 to 250) keep records of misplaced pupils. About the same percentages keep records of transfers.

The chief causes of misplacement.—Necessity of balancing class size, irregular schedules, election of special subjects such as music (orchestra, band, and glee club), and the arrangement of special programs for pupils who must earn a portion of the family income or who for some other reason are present only a portion of the school day, are the chief causes of misplacement.

Waples, Douglass, and Tyler, Ralph Winfred. Research Methods and Teachers' Problems. New York, The Macmillan Co., 193C. pp 12-15.

TABLE 33.—Percentages of schools keeping record of misplaced pupils and of pupils transferred during a given semester

Enrollment group	Record of misplaced pupils		Enrollment group	Record of misplaced pupils	Record of transfers
51 to 100.	20	20	501 to 750	15	9
101 to 250.	43	34		29	29
251 to 500.	26	21		13	13

Reasons for transfer of pupils from one homogeneous level to another.—The most frequent reason for the transfer of pupils from one homogeneous level to another is the teacher's judgment that the pupil was misplaced. (Table 34.) It is the only reason assigned in the replies from more than a third of the largest schools. It is the most frequent reason for transfer in more than 90 per cent of schools with total enrollment of 101 or more. The second most frequent reason for transfer is the necessity for balancing class size. In most schools consideration is given also to the request of the pupil or the parent for transfer.

Other reasons sometimes assigned for transfer are: Achievement-test results, counselor's request, improvement or deterioration of pupil's work, discipline reasons to secure change of companions, scheduling difficulties, election of special subjects such as music, and arrangement of special programs for pupils who can attend only part time.

Table 34.—Reasons for transfer of pupils from one homogeneous level to another, ranked in order of percentage frequency for second semester of 1929-30

		Enr	ellment g	roup		
Order of ranking the four chief reasons in for transfer	101-250	251-506	501-750	751- 1,000	More than 1,000	Mean
1	2	8	4	1.		7
1. 1, 2	46 26	46	41 25 12	35 31	38 21	41
1, 2, 8, 4 1, 2, 4, 8	3	8	12	11	7 10	8
1, 4, 3, 2 2, 1	3 6		4 2	3	8	2
All other orders of ranking	16	14	10	14	16	14

¹ Code 1.—Teacher's judgment that pupil was misplaced.

Necessity of balancing class size.
 Request or objection of pupil.
 Request or objection of parent.

6. FREQUENCY OF COMPLETE REORGANIZATION OF HOMOGENEOUS GROUPS

Variation of practice.—In a few schools the groups are reorganized after each issue of marks—that is, every 4 to 12 weeks—by a systematic transfer of misplaced pupils. Scheduling difficulties impede this process in all except the largest schools.

Reorganization in schools of different types.—Usually the frequency of reorganization of homogeneous groups is determined by the frequency of promotion. Schools including grades 7 to 9 show considerably greater tendency than any other type of school to reorganize semiannually. Other types are about equally divided between annual and semiannual reorganization. (Table 35.)

Reorganization in schools of different sizes.—Only 20 per cent of the smaller schools (51 to 100) reorganize semi-annually as compared with 74 per cent of the larger schools. (Table 36.) There is a distinct tendency for semiannual reorganization to increase and annual reorganization to decrease as the total enrollment increases.

(In Tables 35 and 36 "Other" includes periods of 5, 8, 9, 10, and 12 weeks. These are the intervals at which marks are issued in the respective schools.)

TABLE 35.—Percentage of schools of different types, according to grades included, reorganizing pupils at various intervals of time into new homogeneous groups

		R	eorganiza	tion occ	urs	
Type of organization	Every 4 weeks	Every 6 weeks	Each semes- ter	Each year	Other	Total (per cent)
1	1		4			7
7 to 9	0 3 0 1 0 0 3	7 4 0 0 0 0 0	66 41 54 56 40 40	19 47 46 42 60 40	8 5 0 1 0 20 8	100 100 100 100 100 100

TABLE 36.—Percentage of schools of different total enrollments reorganizing pupils at various intervals of time into new homogeneous groups

		Rec	organizat	ion occu	rs	
Enrollment group	Every 4 weeks	Every 6 weeks	Each semes- ter	Each year	Other	Total (per cent)
1	2	1	4		6	7
51 to 100	20	20	20	20 53	20	100
101 to 250 251 to 500	0	6	39	53	2	100
201 4 270	1 4	3	40	51	4	100
	2	2	39	43	9	100
751 to 1,000	0	3	60	32	5	100
More than 1,000	0	3	74	19	4	100

7. MODIFICATION OF COURSES

Relation of modification of courses to size of school.—The respondents were asked to designate the grades and subjects in which they had developed carefully modified courses for different homogeneous levels and to state which courses they regarded as sufficiently successful to be worthy of study by others. No schools of ninth-grade enrollment of fewer than 30 reported carefully modified courses in any grade or subject. (Fig. 31.) However, 8 per cent of schools with mathgrade enrollments 30 to 59 report the careful adaptation of at least some courses to the various homogeneous levels. The percentage increases as the size of the school increases until 48 per cent of schools with ninth-grade enrollments 500 to 1,000 report carefully modified courses in some subjects.

No schools with ninth-grade enrollment of fewer than 100 estimate their modified courses to be worthy of study by others. From 6 per cent (grade enrollment 100 to 249) to 20 per cent (grade enrollment 500 to 1,000) of the schools of other ninth-grade enrollment groups express a measure of confidence in the merit of such differentiation of courses as they have made.

The extent to which courses are being carefully modified increases as the total enrollment increases. (Table 37.) In this respect the smallest schools are doing nothing. About one school in eight of total enrollment 101 to 250, one in seven of total enrollment 251 to 750, and one in three

of total enrollment of more than 750, are carefully differentiating certain courses.

Only the larger schools (total enrollment 751 or more) are considerably inclined to regard their efforts at modification of courses as worthy of study by others.

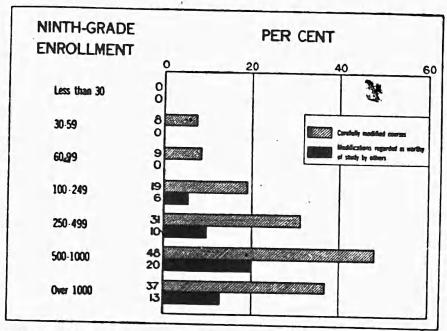


Figure 31.—Percentages of schools of different ninth-grade enrollments reporting courses carefully modified for each homogeneous level, and percentages of schools regarding their courses as worthy of study by others

Table 37.—Percentages of schools of each total-enrollment group providing carefully modified courses for each homogeneous level, and percentages providing courses regarded as worthy of study by others

Enrollment group	Carefully modified courses	Modified courses worthy of study	Enrollment group	Carefully modified courses	Modified courses worthy of study
51 to 100	0 12 14	0 0 2	501 to 750	31 35	0 11 14

Relation of modification of courses to types of school organization.—Schools including grades 6 to 11 or grades 8 to 11 report no carefully modified courses which they regard as worthy of study by others. (Table 38.) Six per cent of schools including grades 7 to 12 report some differentiated

courses and all regard the courses as meriting study by others. About a third of (1) the schools of the miscellaneous "All others" type, (2) the schools including grades 7 to 9, (3) the schools including grades 9 to 12, and (4) schools including grades 10 to 12, have some modified courses.

Schools including grades 7 to 9 or grades 10 to 12 are most inclined to regard their modified courses as sufficiently evolved to be worthy of study by others. Some significance may be attached to the fact that the reorganized schools have greater confidence than other types of schools in the success of their efforts to modify courses for different ability levels. The fact may reflect a greater emphasis placed by reorganized schools on provisions for the individual student.

Table 38.—Percentages of schools of each type of organization providing carefully modified courses for each homogeneous level, and percentages providing courses regarded as worthy of study by others

Type of organization	Care- fully modi- fied courses	Modified courses worthy of study	Type of organization	Care- fully modi- fied courses	Modi- fied courses worthy of study
7 to 12	6	6	9 to 12	32	3
	9	0	10 to 12	33	13
	30	12	All others, miscellaneous	31	7

Specific grades and subject-matter fields where courses have been carefully modified.—In general, differentiation of courses has advanced much farther in grades 7, 8, and 9 than in grades 10, 11, and 12, there being three times as many modified courses in the former grades as in the latter. (Table 39.) Courses are modified more frequently in the ninth grade than in any other single grade.

In each grade English leads all other subject-matter fields in the number of differentiated courses. However, in grades 7 and 8 mathematics is a close second and social studies a fairly close third. In grade 9 the three subject-matter fields rank in the same order but English has materially increased its lead over the other two. In grades 10 to 12 the frequency of modified courses in all subject-matter fields decreases, but English continues to lead by a wide margin

with 50 differentiated courses as compared with 16 for mathematics and 20 for social studies. Throughout all grades science ranks as a distant fourth. In science there are a total of but 51 modified courses (Column 9, Table 39) as compared with 89 for social studies, 102 for mathematics, and 153 for English. Only scattering attempts have been made to differentiate courses in foreign language, art, commercial subjects, industrial and household arts; no attempt has been made in these schools to differentiate courses in other subject-matter fields.

Table 39.—Courses carefully modified for different homogeneous levels

Subject	Freq	uency	of car	efully 1	modific	ed cour	ses—G	rades
	7	8	9	10	11	12	13	Total
1	3	8	4			7	8	9
English Mathematics Social studies Science Sci	29 28 23 14	29 28 23 14	43 80 23 14	21 8 8 3	16 4 6 3	13 4 6 3	2	153 102 89 51
Foreign language Art Commercial subjects Industrial and household arts	1	1 1	1 1 1	1 1	1 1	1		6 6 3
Total	96	96	115	44	32	28	2	413

Relation of amount of grouping in each subject-matter field to the frequency of carefully modified courses. - The preponderance of carefully modified courses in English can not be ascribed entirely to the fact that more offerings in English than in any other subject-matter field are presented to pupils in homogeneous groups. The percentages of all offerings presented to pupils in homogeneous groups have been shown (Fig. 16) to be as follows: English, 70; mathematics, 62; social studies, 61; science, 54; foreign language, 46; art, 29; commercial subjects, 39; industrial and household arts, 32. Taking English as a base, one finds 88 per cent as much grouping in mathematics as in English; 87 per cent as much in social studies; 77 per cent as much in science; 66 per cent as much in foreign language; 41 per cent as much in art; 56 per cent as much in commercial subjects; and 47 per cent as much in industrial and household arts. From this latter

series of percentages one may compute that, if carefully modified courses were proportionately as frequent in the other subject-matter fields as in English, the series of frequencies given in Column 9, Table 39, would read as follows: Mathematics, 134; social studies, 133; science, 118; foreign language, 101; art, 63; commercial subjects, 86; industrial and household arts, 72. In other words, 0.8 as many carefully modified courses were actually reported in mathematics, 0.7 as many in social studies, 0.5 as many in science, 0.1 as many in foreign language or art, 0.04 as many in industrial and household arts, and 0.03 as many in commercial subjects, as would have been reported if modified courses occurred proportionately as frequently, in these subject-matter fields as in English.

8. MODIFICATION OF TEACHING PROCEDURE

Greater progress in modifying teaching procedure than in modifying subject matter.—Differentiation of teaching procedure has advanced much farther than differentiation of subject matter. (Compare Figs. 31 and 32.) There are several reasons why this is true. In many systems subject matter is still rather rigidly and uniformly prescribed for all pupils; hence there is greater freedom to experiment with differentiated teaching procedures than with differentiated subject matter. Then again psychological studies have been directed more often toward differences between dull and bright pupils in the manner of learning and the capacity for learning than toward the kinds of subject matter best adapted to each type of pupil. Summaries of the findings of these studies are now being used by many schools as guides to the differentiation of teaching procedure. Then also part of the unanalyzed art of teaching has consisted always in the teacher's capacity to sense the needs of the learner and to provide for them. Hence, when good teachers receive a homogeneous group they are quick to recognize that certain teaching techniques are in order.

Modifying teaching procedure within the class section.—Obviously the demands upon the teacher are quite different when pupils are grouped within the class section than when pupils are grouped into class sections. In the former case

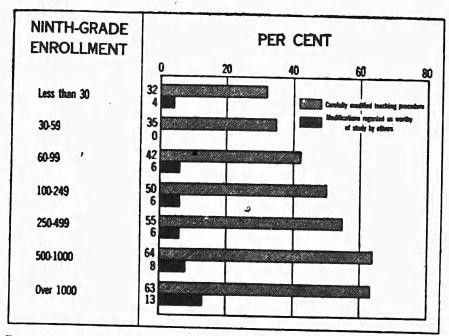


FIGURE 32.—Percentages of schools of different ninth-grade enrollments reporting carefully modified teaching procedures for each homogeneous level and percentages of schools regarding their modified procedures as worthy of study by others

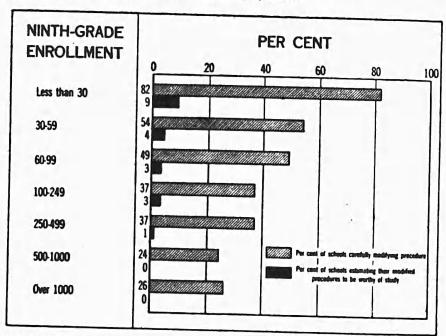


FIGURE 33.—Percentage of schools of each ninth-grade enrollment group carefully modifying teaching procedure within the class section, for groups of different levels, and percentage regarding their modifications as worthy of study by others

some kind of differentiated unit assignments seems essential to success. In the latter case either the unit method or more traditional procedures may be used.

It has already been shown (Ch. III, Pt. I) that small schools do more grouping within the class section than large schools. Therefore, it might be anticipated that differentiation of teaching procedure within the class section is a practice more common to small than to large schools, which is the essential fact set forth by Figure 33. Only a very small percentage of schools of any size estimate their plans to be so successful as to merit study by others. (Fig. 33 and Column 3, Table 40.) However, the percentage of estimated success is relatively large in the small schools. No significant differences appear for schools of different types according to grades included.

Table 40.—Percentage of schools of each total-enrollment group carefully modifying teaching procedure within the class section for groups of different levels and percentage regarding their modifications as worthy of study by others

Enrollment group	Modify- ing teach- ing pro- cedure	Regarding their procedure as worthy of study	Enrollment group	Modify- ing teach- ing pro- cedure	Regarding their procedure as worthy of study
1			1	1	
51 to 100	100 48 36	20 0 5	501 to 750	39 52 35	2 6 0

Modifying teaching procedure for homogeneous groups scheduled in separate class sections.—It has already been shown (Ch. III, Pt. I) that grouping into class sections is the dominant practice in the larger schools. Whether the schools are classified according to ninth-grade enrollment (Fig. 32) or total enrollment (Table 41) the essential fact is that larger schools are differentiating teaching procedure more consistently than small schools and are meeting with somewhat greater success. However, only 13 per cent of schools with ninth-grade enrollment of more than 1,000 (Fig. 32) and 7 per cent of schools with total enrollment of

more than 1,000 (Table 41) regard their attempts as worthy of study by others.

The organization of the data according to grades included in the various schools yields no relationships of any great significance. Schools including grades 8 to 11 and grades 6 to 11 estimate no success with differentiated teaching procedures. However, only 7 per cent of (1) schools of the miscellaneous "All others" type, (2) schools including grades 7 to 9 and (3) schools including grades 10 to 12, and only 4 per cent of (1) schools including grades 7 to 12 and (2) schools including grades 9 to 12 regard their differentiated teaching procedures sufficiently successful to merit study by others.

Table 41.—Percentage of schools of different total enrollments reporting carefully modified teaching procedures for each homogeneous level scheduled in separate class sections

Enrollment group	Modify- ing teach- ing pro- cedures	Regarding modified proce- dures as worthy of study	Enrollment group	Modify- ing teach- ing pro- cedures	Regarding modified proce- dures as worthy of study
51 to 100	0 32 54	0 0 5	501 to 750	53 46 59	4 6 7

Special modifications of teaching procedure.—The Dalton plan, the Morrison plan, the Winnetka technique, the project curriculum, or some combination of two or more of these is used in from 14 per cent to 60 per cent of the schools of each total-enrollment group. Other reported plans, methods or techniques in the frequency of their use are: The contract plan, the unit plan, supervised study, laboratory plan, jobsheet plan, the qualitative assignment, the problem method, and the group-study plan. A common characteristic of most of these plans or techniques is the unit assignment, a fact brought out by Part II of this report which is given over to a comparative study of these and related procedures for individualizing instruction. Evidently plans characterized by the unit assignment and homogeneous grouping are regarded in practice as complementary rather than as alternative

^{&#}x27;Maguire, Edward Randall. The Group Study Plan. New York, Chas. Scribner's Sons, 1928. 203 pp.

procedures. Of the selected group of schools being studied for outstanding practices in homogeneous grouping the reorganized schools are making most use of plans characterized by the unit assignment. Schools of all sizes and types report plans characterized by the unit assignment to function more effectively in homogeneous than in heterogeneous groups.

9. SUMMARY

A central agency for classifying pupils predominates in schools using homogeneous grouping most extensively; that is, in large schools, and in schools of the reorganized type.

Three distinct procedures are followed in determining each pupil's classification level. Two of these procedures employ a single numerical criterion. The third omits the numerical criterion. Where single numerical criteria are used three different methods are employed in determining the range of scores for each classification level.

In the schools studied a definite effort appears to be made to schedule fewer pupils to slow sections than to the average sections, and more pupils to the fast sections than to average sections.

Few administrators believe that a perfect homogeneity can or must prevail. Misplacement of pupils varies from 1 to 10 per cent of the total enrollment with the median at 3 per cent. The chief causes of misplacement are: The necessity of balancing class size, irregular schedules, the election of special subjects such as music (orchestra, band, and glee club), and the arrangement of special programs for pupils who for one reason or another can be present for only a portion of the school day. The chief reasons for transferring a pupil from one level to another, in the order of frequency, are: Teacher's judgment that the pupil was misplaced, the necessity of balancing class size, the request or objection of the pupil, and the request or objection of the parent.

Usually the frequency with which all pupils are reorganized into new homogeneous groups is determined by the frequency of promotion.

The percentage of carefully modified courses for the different classification levels increases with increase in grade enroll-

However, even among the largest schools less than a half report any carefully modified courses in any subject. Only the larger schools regard their efforts as worthy of study by others. The reorganized schools are more inclined than the unreorganized schools to regard their modified courses as worthy of study. Three times as many modified courses are reported in grades 7, 8, and 9 as in grades 10, 11, and 12. Carefully modified courses are reported in eight subject-matter fields. English leads the list in the proportion of carefully modified courses. The other seven subjectmatter fields in the rank order of proportion of carefully modified courses are: Mathematics, social studies, science, foreign language, art, industrial and household arts, and commercial subjects.

The differentiation of teaching procedure has advanced much farther than the differentiation of subject matter. Small schools are differentiating teaching procedure within the class section much more extensively than large schools. Schools using homogeneous grouping are making extensive use of plans characterized by the unit assignment. These schools report the unit assignment to be more effective in

homogeneous than in heterogeneous groups.

CHAPTER VI: HOMOGENEOUS GROUPING IN INDIVIDUAL SCHOOLS AND SYSTEMS

1. METHOD OF PRESENTATION

Illustrating the data of previous chapters.—The practices of individual schools and school systems, which are briefly summarized in this chapter have been selected with reference to their value in illustrating the findings set forth in the preceding chapters. The illustrations naturally deal with (1) bases of grouping, (2) collection and organization of data for grouping, (3) use of the data to classify pupils, (4) misplacement of pupils, (5) transfer of pupils from one level to another, (6) differentiated content, (7) differentiated teaching procedure, (8) homogeneous grouping and special classes, and (9) certain miscellaneous features.

The reader may wonder why the materials of the chapter are not presented under the above logical headings rather than under the names of the individual schools or systems the practices of which are summarized. The answer is that while each illustration has been chosen to exemplify some particular feature of homogeneous grouping in current practice, nevertheless a feature isolated completely from other characteristics or practices of the school loses its illustrative value and becomes merely a statistical datum which adds nothing at all to the treatment of grouping already given in preceding chapters.

A summary and a key.—However, an effort has been made to secure the additional benefits of logical organization by means of the following outline in which the features illustrated in the chapter are outlined under 9 main heads and 36 subheads. Following each head or subhead are numbers, corresponding to the section numbers of the chapter, indicating the schools or systems whose practices in grouping serve to illustrate a given phase of grouping. The outline should serve both as a summary and as a means of ready reference to illustrative material bearing upon any feature of homogeneous grouping in practice.

[148]



Record of grouping.	a
Bases of grouping:	
Aims of pupils and past achievement	16
College entrance objectives	16
composite of many factors	13, 14
Diagnostic tests	15
Intelligence quotient, teacher's estimate and elementary- school marks	6
Intelligence quotient and teacher's marks	3
Numerical measure, single	2
Physical-capacity index	16
Prognostic tests	2.5
Sex	15
Teacher's judgment.	7, 10
Collection and organization of data for grouping:	15, 17
Classification card for summarizing data 7, 8,	
Graphical presentation of data for each child.	10, 11
Frinted instructions to persons gathering data	1.00
Reducing data to sigma indexes	10
Reducing data to sigma indexes	11
Translating data into ages. Use of data to classify pupils:	7
Central agency of grouping	
Continuation of alternation	, 4, 12
Continuation of elementary-school grouping into the second-	
ary school4, 11,	12, 13
Number of levels provided for 12, 13,	15, 20
Symbols to designate ability levels	Q
Systematic classification using large amount of data 7 0	10 14
Misplacement of pupils.	12 17
Transfers from one level to another 2, 4, 13, 14	17. 19
Differentiated content:	
Assignments, modified 2, 9, 12, 15, 17, 1	18. 20
Different examinations for each ability level	6
Homogeneity through election of differentiated curriculums	4
Principles of differentiation of subject matter	20
Differentiated teaching procedure:	20
Modified techniques 5, 9, 12, 15, 16, 1	7 20
Objectives in mathematics for slow pupils	19
Principles governing work with slow pupils	
nomogeneous grouping and special classes:	12
Segregation of failures	15
Segregation of gifted	20,
Selecting groups to be accelerated	7, 14
Grouping in elective subjects Heterogeneity of intelligence quotients where many bases	15
are used	12
Homogeneous groups formed in each curriculum	6, 14
Interpreting sigma scores	11
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As a rule the materials of this chapter have applied to all subject-matter fields. However, specific references are made to individual subject-matter fields as follows:

English.	15, 16, 17, 18, 1	0 20
Latin	15, 1	6 17
Mathematics	12, 15, 1	6.20
Modern languages	15 1	6 20
Physical education		16
orience	16.1	7 20
Social studies	16, 1	7, 20

2. J. STERLING MORTON HIGH SCHOOL, CICERO, ILL.

Classification on a single numerical measure.—This school enrolling approximately 6,000 pupils each year is tentatively classified on the basis of a single numerical measure, the index from the Otis Classification Test. Pupils are shifted from one homogeneous level to another whenever the judgment of the teachers indicates this should be done.

Differentiated assignments.—Differentiated assignments for three ability levels are provided in all subjects.

& DISTRICT NO. 1, PUEBLO, COLO.

Grade lists prepared by the director of tests and measurements.—In this system grade lists are prepared in the office of the director of tests and measurements for each school in the district. Each grade list carries the names of the pupils of a given grade in a given building, arranged in the order of the intelligence quotients. Each list is divided into class sections, the number of sections, of course, depending upon the number of pupils.

Using the grade lists.—The lists are forwarded to the building principals, who, with the help of the teachers, make necessary transfers of pupils from one section to another on the basis of the pupils' actual achievement. Such changes are submitted to the director of tests and measurements for approval.

4. ROOSEVELT JUNIOR HIGH SCHOOL, EAST CHICAGO, IND.

Continuation of homogeneous groups from the elementary school.—In East Chicago the data for ability grouping are collected by the city director of tests. Grouping in the

junior high school is a continuation of the practice begun in the first grade and maintained through the elementary grades.

Transfers from one level to another.—The main basis of grouping is a measure of academic intelligence derived from the administration of a group mental test. At the end of each 10-week period the dean of boys and the dean of girls inspect the pupils' marks. Recommendations for transfer from one level to another are based on this inspection.

Misplacement of pupils.—Grouping with very little misplacement is maintained in grades 7 and 8 in all subjects. Considerable grouping in the required subjects is maintained in grade 9-B. In grade 9-A the only homogeneity existing is the result of the election of differentiated curriculums. Administrative expediency frequently forces the misplacement of pupils but the reduced heterogeneity still obtaining is regarded by those in charge as worth while.

5. JUNIOR HIGH SCHOOL, WEST, ARLINGTON, MASS.

Class sections not labeled as to ability level.—Homogeneous grouping in this school is now based upon the Otis Classification Test. In making out the program the principal assigns pupils so far as possible to class sections appropriate to their ability levels. However, no pupil is informed of his relative standing on the test and no teacher is told the ability levels of her respective class sections.

Two effects of this procedure.—This radical departure from the customary procedure has at least two important effects. First, it leaves the teacher free from any externally imposed bias in her efforts to discover the needs of the class; second, it places a high premium upon differentiation in teaching procedure, since differentiated content may not be prescribed in advance without designating the class section as being of one ability level or another. Undoubtedly, opinion will vary as to whether these two effects are desirable.

6. JUNIOR-SENIOR HIGH SCHOOL, BATAVIA, N. Y.

Groups formed within each curriculum.—In this school ability groups are formed within each curriculum. In the vocational and commercial curriculums slow, average, and

fast groups are formed. In the college-preparatory curriculum only average and fast groups are formed. A different final examination is prepared for each ability level.

Basis of grouping.—Grouping is based on intelligence quotients, teachers' estimates of ability, and marks earned in the elementary grades.

Curriculums for the several levels still undifferentiated.—Although the supervisory and teaching staffs have been working with the problem of differentiating curriculum material for about five years, Principal H. D. Weber believes that much remains to be done. His observations which follow are applicable to most schools practicing homogeneous grouping. He says:

As yet we have not written out definite curriculums for the different groups. Our regular course of study is greatly expanded for the superior groups while for the slower groups it is made much simpler. The whole problem is in such an experimental stage that as yet we have no written material of any value.

7. BLEWETT INTERMEDIATE SCHOOL, FT. LOUIS, MO.

Data collected as a basis for grouping.—Five elementary schools contribute pupils to Blewett. A few weeks before the pupils are sent to Blewett the principals of the contributing schools submit the following data called for at the top of the "Diagnostic chart" (Fig. 34): (1) Pupil's name, (2) elementary school, (3) pupil's sex, (4) pupil's health rating—E, G, F, or P, as given by the school physician, (5) pupil's intelligence quotient, (6) pupil's rank in class, (7) name of intelligence test from which the intelligence quotient was derived.

The principals also furnish the following data called for on the left section of the "Diagnostic chart": (1) Date—year and month when the intelligence test was given; (2) mental age—the raw score is given in the "score" column and mental age in years and months is given in the "age" column; (3) chronological age—in years and months at the time the intelligence test was taken; (4) height—in inches and quarter inches; (5) weight—in pounds and quarter pounds; (6) arithmetic fundamentals—score on a standardized arithmetic test; (7) reading rate and reading compre-

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TEST				200 2	CHI			LVO	100	100	200	L			3
	1001	SCORE	NO.		+	1	I	+	+			-			
HENTAL AGE									H						3
CHRONOLOGICAL AGE				02											2
HEIGHT															
WEIGHT				:	+			+	+		1	1			2
ARTHUSTIC PURB.				_	-				-						
READING RATE				:	-						-				:
READING COMPR.					-			1	-			-			
READING POWER				:											2
DENTITION ABE					-				-			1			
BOOINE ARE				=	-			1				-			
BRAHMAR				_				1			-	-			
выстама				2	-						+				2
PUNCTUATION				_ _	-			+							
				•	_										•

Ploube 34.—Card carrying data for forming homogeneous groups in Blewett Intermediate School, St. Louis, Mo.

ST. LOUIS PUBLIC SCHOOLS

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hension—derived from Monroe's Standardized General Survey; (8) dentition age—information furnished by the school physician; (9) social age—given in years as determined by the teachers through observation of the pupil's social interests, the types of games and reading matter, and the ages of pupils that interest him most.

All data translated into "ages."—Inspection of the diagnostic chart shows that practically all the data are translated into corresponding ages. For example, the spelling score is interpreted as being equivalent to a spelling age of 15 years 6 months if it is equal to the average score made by a large number of pupils of that age, and similarly for other test scores. Height and weight are translated into ages by the use of tables which give the average height and weight of pupils of the various ages. Obviously in this case separate tables must be prepared for boys and girls. A table is also provided to facilitate the computation of pupils' present chronological ages, a calculation frequently necessary since the chronological age appearing on the card is the age of the pupil at the time of taking his intelligence test.

Graphical presentation of the data for a given pupil.—The right-hand side of the "Diagnostic chart" lists along the horizontal axis the various items of information concerning the individual pupil. The vertical axis is graduated in years and half years from 8 to 24. Since the data have been reduced to ages it is a simple matter to plot a curve indicating the individual pupil's age on each item listed. This is done by placing a black dot on each vertical line to show the pupil's age on the corresponding item. These dots are connected with a solid black line.

Pupil's graph compared with the norm as a standard.—Red dots are placed on the same vertical lines showing, (1) on the first vertical line the average mental age of the class, (2) on the second vertical line the average chronological age of the class, (3) on the third, fourth, ninth, and tenth vertical lines the pupil's own chronological age, (4) on the fifth vertical line the class average in arithmetic, (5) on the sixth, seventh, and eighth vertical lines the class averages derived from the reading test, (6) on the eleventh, twelfth, and thirteenth vertical lines the class averages in grammar,

spelling, and punctuation, respectively. When these red dots are connected with a solid red line the red and the black lines will show the extent or degree to which the pupil possesses the various traits or abilities as compared with the corresponding norms for his age.

Use of the "Diagnostic chart" in classifying pupils.—At Blewett a definite and orderly procedure is followed in using the organized data for the purposes of classification. First, the cards are arranged in the order of the intelligence quotients, from lowest to highest. Cards are included for the pupils from all contributing elementary schools. Perhaps 250 such cards are available. Second, the upper 80 cards are selected for study. From these 80 are removed each card showing one or more of the following: A poor mark in health, abnormal weight or height conditions, dentition age below the average of the group, social immaturity, performance below average in the fundamentals of arithmetic or reading, an achievement rank in the lowest third. About 30 to 35 cards remain as a result of these eliminations. These pupils form the "top" group, which finishes three years' work in two years.

The discarded cards are used in selecting the next group, which will spend two and one-half years in the junior high school.

This process of considering all factors for which data are available is continued until the lowest third of the class is reached. These pupils spend the full three years in the junior high school.

The cards of the children who have the lowest intelligence quotients and who are physiologically mature are thrown into two groups which are further segregated with respect to sex. Children of advanced development and of limited intellect tend to focus attention on physical rather than on intellectual interests. They have a better chance to succeed in the academic work when segregated on the basis of sex, especially when the method of presenting the work may be varied to appeal to the interests of each group.



¹ Adapted from reports submitted by Philipine Crecellus, ninth-grade administrator, Blewett Intermediate School. It should be mentioned that recent changes in the number of years included in the Blewett School make continuation of this plan impossible there except in a modified form.

8. ROOSEVELT JUNIOR HIGH SCHOOL, FOND DU LAC, WIS.

Data collected as a basis for classification.—The classification card used in this school resembles in important respects the "Diagnostic chart" used in Blewett Junior High School. (Fig. 35.)

Inspection of this card shows that a wide variety of significant data are collected. These data include: Important facts concerning home conditions, health, physical handicaps, special abilities, special interests, and temperament; ratings of industry, leadership, reliability, initiative, and persistence; rank in class, height, weight, sex, chronological age, mental age, educational age, social background, grades skipped, grades repeated, school from which pupil came, and scores on a variety of tests.

Obviously much of the data can be shown graphically on the squared area near the center of the card.

Use of the card in classifying pupils.—The principal states that he studies the entire card carefully and then decides somewhat subjectively into which section the individual should be placed.

9. AMOS HIATT JUNIOR HIGH SCHOOL, DES MOINES, IOWA

Origin of the system.—The system of classifying junior high school pupils in Des Moines, Iowa, was established through a committee on pupil accounting, of which R. Grigsby, director of pupil adjustment, was chairman.

Collecting data as a basis for grouping.—All 6-A pupils are given a standard group test of mental ability. To prevent coaching the test is varied from semester to semester. The tests are given and scored under the direction of the junior high school principal.

To supplement the mental test each elementary-school principal forwards to the junior high school principal "Information cards" (Fig. 36) for the pupils promoted from his school to the junior high school. This card carries the usual "Census" data. In addition, there is (1) a rating on a 5-point scale of (a) the pupil's accomplishment in each subject carried; (b) the pupil's general ability, industry, accuracy, initiative, reliability, and school deportment; (2) evidence of

7

2	PERSONAL D	PERSONAL DATA—CLASSIFICATION CARD	ION CARD	Bretlon		
Name	Date of	Date of Entrance	Berr			
Entered as	First from	Grades Skipped	pedd	Grades Repeated	ested	
Fifth Grade	School, Fourth Grade	Behool	d. Date of Birth			
Home Conditions		Saja	3	VE 0	Age or Quotient	Rank
		ania TaeU	nino Ai	C. A.		
Health		Men Men 921	logy- form form form form	R. A.		
		teial leial meri bre trati itati	ysiol jth. ith.	A. A.		
Physical Handicape		os os os os os os os os os os os os os o	CPI VLI VLI VLI VLI VLI VLI VLI VLI VLI VL	E. A.		5
				М. А.		
Special Abilities		19.1 16		1. 9.		
				E Q.		
Special interests		9.0 18		A. Q.		
				Test	Form Date	Date Given
Tencerment (underline) Easy	Temcerment (undertine) Easy Coing, Independent; Happy,	8.2 14		Otta		
Stallen, Irritable; Tlanid,	Stallen, Irritable; Timid, Aggressive; Bager, Abrt.					
Indifferent; Confident, N.	Indifferent; Confident, No Confidence; Easily Confused,	7,913		Stanford		
Careless				Terman		
1, 2 8 4 6	Height	6.2 12				
Industry	Weight					
Leadershir	Normal Weight	5.1.11				
Reliability	% Above Normal					
Initiative	% Below Normal	4:110				
Persistance	4.1					
Rank in Class	0	3 9				
						-

FIGURE 36.- Classification card used in Roosevelt Junior High School, Fond du Lac, Wis.



leadership; (3) rating of attendance on a 3-point scale; (4) facts about the pupil's (a) hobbies, (b) disposition, (c) physical handicaps, (d) home, (e) temperament, (f) special talents, (g) objectives, and (h) interests.

B G	Pupil's Gu	idan	ce Card	Charteries 1	Test Scare Des	
Last Name	F rst Name			Kandenge	-	
Present School	Yr. Ma.	Dey	Ade Lass Berchday	Present Grade	Tetephone	
bjame of Futher	Orre	Оссъринов		Where Employed		
Name of Mother						
Creardies or Scep-perent						
	1					
SCHOLARSHIP	Semester Mark	1 но	ME ROXIM TEACH	EDIC ECTIVATE		
SCHULARSHIP Subjects	Seminar Mark to Date 1 2 3 4 5		ME ROOM TEACH	ER'S ESTIMATE	Rema	
	to Date	Crear	al Abdey	ER'S ESTIMATE	1 2 3 4 9	
	1 2 3 4 5	Coner In/aac	al Abdity ry or Effort	ER'S ESTIMATE	1 2 3 4 9	
Subjects	1 2 3 4 5 1 2 3 4 5	Crear In/sac	ni Ability ry or Effort	EE'S ESTIMATE	1 2 3 4 5	
Subjects	1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5	Comer Infast Acres Reliab	al Abdary ry or Effort serp	ER'S ESTIMATE	1 2 3 4 5	
Subjects	1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5	Conser In ast Accur Rebub Instant	al Abdary ry or Effort serp		1 2 3 4 5	

To the H. R. Teacher: Underline the words which you think apply or add others which seem more nearly to describe his pupil and his home environment.

Hobby or Avecation:	Masse, Atllenes, Mochanics, Scouna, Camp Fire, Nature Study, Bra-
Disposition:	Shy. Abbreshive, Timid, Stubborn, Yielding, Quick-tempered, Placed, Morone, Happy, Etc.
Physical Handicapa:	Speech, Sight, Hearing, Crippled, Nose and Thront, Nutrition, Cordine.
Is Thild:	Disobedient, Untruthful, Truant, Restless, Obscene ur Valler, Sphasticsted, Impertinent, Etc.
Bome Infraences:	Broken Home, Indifference, Indipent, Caltured, Wholesome, Rehijima, Intelligent,
Cooperation of Parents:	Active, Indifferent, Crimcal, Hostile, Friendly, Etc
Does pupil .av	any special inlent?
Does papil inte	nd to finish 'High School'
	ctivities in which pupil has aken part
le pupul a leader	In what way?

FIGURE 36.—Information card (front and back) carrying data used in classifying junior high school pupils in Des Moines, Iowa

Method of using the data in classifying pupils.—A very definite procedure is prescribed. First, the junior high school

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principal prepares a list of the incoming pupils ranked in the order of their mental-test scores. Second, the information cards are arranged in rank order according to the sum of the rankings given by the elementary teachers in the various elementary subjects. Third, the individual pupil's rank on the mental test is added to the sum of his rankings in the various elementary subjects.² This sum is the pupil's classification index.

The principal next arranges the list of pupils in the order of their classification indexes, and forms as many class sections as the number of pupils and the size of the class permit.

Plan secures reduced heterogeneity.—The committee recognizes that class sections provided by this plan will not be completely homogeneous in any factor affecting pupil progress. However, the range of ability to do academic work will be greatly reduced. Nevertheless, classroom teachers must still provide assignments, methods, and materials adapted to the individuals of the group.

Symbols to designate the respective ability levels.—A neutral symbol not likely to suggest any fixed grouping plan is used. Transfers to other schools or dismissal slips carry such symbols as 7-B ¼ or 7-A ¾. The numerator of the fraction indicates the pupil's group and the denominator the total number of ability groups in that grade of that school during that particular semester.

Adapting instruction to rarious ability levels.—The committee believes that ability grouping presumes differences in quantity, quality, and kind of work done by bright and slow pupils. An interesting part of the committee's work was the addressing of a questionnaire to the junior high school teachers of the city inquiring into texts, materials, and teaching procedures adapted to dull pupils and into the characteristics of dull pupils. Such a study on a large scale should be productive of valuable results.



¹ For statistically acceptable methods of combining ranks see Clark L. Hull, Aptitude Testing. Yonkers-on-Hudson, World Book Co., 1928. pp. 115-117 and 491-492.

10. JUNIOR HIGH SCHOOL NUMBER THREE, TRENTON, N. J.

Data collected as a basis for grouping.—These data include chronological age; sex; academic and recreational activities of major interest; important facts concerning the pupil's health, home, and family; intelligence quotient; mental age; educational age; reading age; arithmetic age; pupil's most recent marks in all subjects; whether or not the grade is being repeated; and regularity or irregularity of his program. (Fig. 37.)

The blank reproduced in Figure 37 is used for pupils who are entering the seventh grade. The blank is necessarily modified somewhat for grades 8 and 9. For example, the ninth-grade blank carries a space wherein check marks may be used to indicate the curriculum and the elective subjects which have been approved by the parent.

A carefully prepared set of instructions for filling out the blank is furnished the teachers. This feature is of primary importance especially where different individuals are called upon to submit data of a more or less subjective nature which later will be subjected to intercomparisons and become a basis for action affecting the pupil.

Use of the data in classifying pupils.—Mathematical computation plays a minor rôle. Assignment to an ability group is made after a careful consideration of all the data. The procedure is subjective.

II. ROOSEVELT JUNIOR HIGH SCHOOL, SALT LAKE CITY, UTAH

Data reduced to "sigma indexes."—The basic factor in the grouping of pupils in the junior high schools of Salt Lake City is the Kuhlman-Anderson Intelligence Test, although scores from various educational tests play an important part. Grouping in the secondary schools is a continuation of a thorough-going policy of grouping in the elementary grades. Classification cards carrying essential data are transmitted from the elementary schools when the pupils are promoted to junior high school. A particularly commendable feature of the form in which these data are transmitted is suggested by the words "sigma index." The theory underlying the use of the sigma index is explained by Hull.

Hull, Clark L. op. cit., pp. 166-171.



TRENTON PUBLIC SCROOLS INDIVIDUAL CLASSIFICATION AND ALLOTMENT BLANK

(To be filled in by the present Teacher for pupils desiring admission to SEVENTH GRADE)

Family Name Girra Name		Date.		*** ** * * * *	
Age (April lat) yra mo. Sex	· Ma	at recent)	1	Tool Lland	Date Gives
	10			-	Date Gives
statement of Academic Activity of Major	MA				
1404m- 4444444444 (4	K A				
Statement of Recreational Activity of					
	Reading A	5	Тем и	red	11 14 40 1140
	Arith Age		Test u	red.,,	
rn details of Health and Home affecting	If pupil is	repeating	this Grade	check bere	
work.				7	
	Mas	Remat M	arka	Subjects for a	
	Subject	Grade	Mark	Subject	Grad
	Regists				
LILLER CO.	History				
	Math				
usical instrument does the pupil play?	Health				
*****	Drawing				
Teacher's Estimate of GFNEI'AL ABIL	Geo. & Sa.				
Une) Superior Abrasa Awasa a A.	Manie				
veruge, Weak.	Shop				
Birthplace of father (nation) (b) Pupil's birthplace (city)	ntate)	2101411	(setion)	
Pupil assigned to Junior School Number	Present school .				
		ipal	***********	Signature)	
Present teacher Junior High School Assignment to: (to be filled in Group Home Boom. Subjects in whice pupil's program is irregular	Princ	Schoul)		ing as turny	



The essential fact so far as practice is concerned is that by use of the "sigma index" the average score made on any test becomes 100. The idea was applied by Otis in the development of his index of brightness. Obviously if the average score on any test is 100 the intercomparison of scores on various tests becomes greatly simplified.

Translating raw scores into sigma scores.—The translation of raw scores into sigma scores requires the calculation of the mean and of the standard deviation of the distribution of raw scores. (Fig. 38.) The mean score becomes 100 a score which is one standard deviation below the mean becomes 80, a score which is one standard deviation above the mean

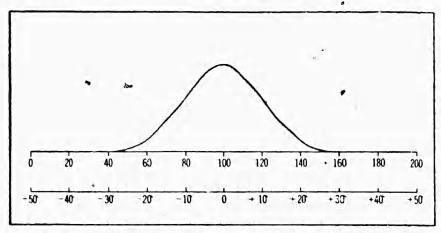


FIGURE 35 —A 200-point scale, based on the standard deviation of the test as a unit, which transmutes the average score on any test to 100

becomes 120, and so on. Suppose the standard deviation of a given test is found to be four. These four points in terms of raw scores now become 20 points in terms of the sigma scale. Or one point in raw score becomes five points on the scale. A table may be computed for each test being used, which will make the translation of raw scores into sigma scores a simple matter consuming very little time. The resulting advantages are great. For instance, the scores on several tests for a pupil above average might then run as follows: 117, 121, 115, 130, 116, 111, 140. These are much more readily comprehended and compared than would be the case if the raw scores were given, perhaps as follows: 29, 148, 25, 98, 32, 78, 55.

Interpreting sigma scores.—Just how readily the sigma scores may be interpreted is shown by the following series of scores: 116, 119, 118, 128, 118, 72, 140. At a glance anyone would select out the next to the last score as needing further study. A score below normal, in company with scores above normal made by the same pupil on other tests, is an instant challenge to further study. In terms of raw scores a greater inconsistency might easily go unobserved.

In view of the simplicity of the sigma scale, the small amount of time required to translate raw scores into sigma scores, and the great advantages accruing in the matter of reading and interpreting the data, more schools are likely to avail themselves of this device.

12. JUNIOR HIGH SCHOOLS, LOS ANGELES, CALIF.

One effect of using many bases of grouping.—In all of the Los Angeles schools homogeneous grouping is based upon all available data concerning the pupil. The extent to which this procedure produces heterogeneity of intelligence quotients is well shown by data submitted by the Robert Louis Stevenson Junior High School. (Table 42.)

Table 42.—The overlapping of intelligence quotients in fast, average, and slow learning groups. Robert Louis Stevenson Junior High School, Los Angeles, second semester, 1930

		Grade			
Class section	7-B	7-A	8-B		
1.	Intelli- gence- quotient range	Intelli- gence- quotient mage	Intelli- gence- quotient range		
·	2	1	•		
Fast Do: A verage Do Do Slow	91-101	105-139 100-118 94-107 89-106 89-100	108-138 100-124 95-103 87-99		
Do	/3-00	83-96 71-86	81-90 73-89		

Interesting facts are revealed by the table. First, the fast sections are composed in all cases of pupils who are normal

or above on the intelligence test; second, the slow sections are composed in all cases of pupils who have intelligence quotients below 100; third, the average sections contain pupils who would rate below normal and other pupils who would rate above normal on the intelligence test.

Data collected as a basis for grouping.—In Central Junior High School the classification of pupils is a function of the junior high school counselor. For each incoming pupil to the seventh grade the counselor is supplied with intelligence and achievement test data; recommendations from the elementary-school principal and teachers; notes about the pupil's health, interests, and home environment; the pupil's height and weight record.

Number of groups formed and major standards for each level.—In Central Junior High School there are usually nine or ten 7-B groups. Usually about two of these take the enriched curriculum, three or four take the average curriculum, and three or four take the minimum-essentials curriculum. Pupils taking the enriched curriculum usually have an intelligence quotient above 110 and eighth to ninth grade placement or above, on standardized tests in reading and arithmetic. Pupils assigned to the average curriculum usually have intelligence quotients of 90 to 110 and sixth to seventh grade placement on standardized tests in reading and arithmetic. Pupils taking the minimum essentials usually have intelligence quotients below 90 and a fourth to sixth grade placement on standardized tests in reading and arithmetic.

Tentative course of study in junior high school mathematics for slow-learning pupils.—A tentative course of study in junior high school mathematics for slow-learning pupils has been worked out in Los Angeles under the direction of Florence D. Fuller, assistant supervisor. The materials of the course were tried out for one semester in two junior high schools and then mimeographed for the use of teachers of slow-learning groups.

A first step in the solution of certain problems pertaining to slow-learning pupils.—The course is regarded as a first step toward the solution of the following problems pertaining to

slow-learning pupils: (1) Shall slow-learning pupils, who seldom if ever have mastered the prerequisites of regular courses, be given materials suited to their needs, regardless of grade? (2) Shall a continuous program be mapped out for them, permitting a gradual but constant development? (3) Shall the work of such pupils be related to the work of the regular grades? (4) How shall they be marked in order that they may be treated justly and encouraged, and yet not be misplaced upon transfer to other schools? (5) How can the school work be related to the lives of the pupils? (6) How can the work be made interesting?

Principles governing work with slow-learning pupils.—The following principles governing the work of the slow pupils were laid down:

- (1) Emphasize mastery at rates normal for such pupils. Avoid dawdling on the one hand and partial mastery on the other.
 - (2) Provide continued drill on each skill which has been developed.
- (3) Use games; contests; races; magic squares; shop, home, community, or school problems; pictures; graphs; concrete materials; anything that promises to lend color or interest to mathematics.
- (4) Break the processes up into single elements and teach them thoroughly, one at a time.
- (5) Slow pupils have difficulty in applying to new situations processes with which they are familiar. So far as possible the pupils' present problems should be introduced to be solved by the processes being taught.
- (6) Low-ability pupils have short-attention spans. Change their work several times during the period.
- (7) Offer the opportunity for pupils to initiate and to direct proceedings. Praise each worthy suggestion and utilize each wherever possible.
- (8) Try to develop in them an appreciation of success and a desire for real achievement. Tests should be of such a nature and administered at such times that the pupils will be quite sure to meet success. Aim to have each pupil make a perfect score on each test. Make them feel sure of some things, at least.
- (9) Build up the ideal of accuracy. When new work has been presented the pupils should know definitely what they are to do. Pupils must learn to check each step in a problem and make sure that mistakes have not occurred.
- (10) Develop an appreciation of quickness and precision. Speed is very important but not at the expense of accuracy.

Objectives of mathematics course for slow-learning pupils in Grade 7-B.—

I. Tallying:

- A. Understanding of the use of tallying.
- B. Ability to interpret tallies.
- C. Ability to tally.
- D. Interest in the use of tallying.

II. Roman notation:

- A. Knowledge of uses for Roman notation.
- B. Knowledge of the values of I, V, X, L, C, D, M.
- C. Ability to interpret Roman numbers from 1 to 100, and probably from 1 to 2,000.
- D. Ability to write Roman numbers from 1 to 100.

III. Arabic notation:

- A. Understanding of integers.
 - Understanding of place values from units to billions.
 - 2. Ability to name the places to billions.
 - 3. Ability to point off and to read numbers to billions.
 - 4. Ability to distinguish the larger of two numbers.
 - Awareness of the use of Arabic numbers in daily life.
 - 6. Ability to write numbers up to millions.
 - 7. Ability to add and subtract accurately.
 - 8. Ability to multiply and divide accurately.

B. Understanding of decimals.

- 1. Understanding of place values.
- 2. Ability to name the place values to hundred-thousandths.
- 3. Ability to point off and read decimals up to and including ten-thousandths.
- Ability to point off and read numbers including integers and decimals.
- 5. Ability to distinguish the larger of two decimals.
- Ability to distinguish the larger of two numbers that include integers and decimals.
- 7. Ability to write decimals up to and including tenthousandths.
- 8. Ability to add and subtract accurately.
- 9. Ability to multiply and divide accurately.
- C. Awareness of numbers in life situations.
- D. Ability to use the short method in multiplying by 10, 100, and 1,000.
- E. Ability to use the short method in dividing by 10, 100, and 1,000.



III. Arabic notation—Continued.

- F. Ability to use the short method in multiplying by relatives of 10, such as 20, 30, 40, and so forth.
- G. Appreciation of the superiority of the Arabic system over the Roman system of notation.
- H. Ability to solve simple problems involving the fundamental operations.

IV. Vocabulary:

A. Understanding of the following words and phrases:

tallying thousands Roman numbers ten-thousands Arabic numbers hundred-thousands figure millions digit ten-millions place value hundred-millions units billions tens tenths hundreds hundredths twenty-one (and similar hythousandths phenated numbers) ten-thousandths subtract decimal borrow whole number centimeter

- B. Ability to pronounce the foregoing words and phrases correctly.
- C. Ability to spell any of the foregoing words commonly needed in written work.

Suggested content and procedure—Roman notation.—Work on Roman numerals should be introduced by an informal discussion. Draw from the pupils as much information as you can. The discussion might be introduced as follows:

protractor-rulers

Find the table that shows the contents of your book. It is near the front of the book. Then turn the page. Find the place where the last chapter is outlined. Have you found it? What is the number of the page on which you have found it? You can't tell? Why not? Well, what is the number of the last chapter? You know, Joe? Where have you seen this number system used before? Yes, sometimes numbers like these are used on watches and clocks. Does anyone have a watch with this kind of numbering? Do you know what we call these numbers? They are called Roman numbers. I'll write the word on the board. Can you spell it? Let us see. Everyone write it. How did you spell it, Jim? Did everyone spell it that way? That's right. Let us all pronounce the word.



Hiller bearing the commence of the world of the state of

¹ Psychology and Educational Research Division, Los Angeles City School District. Tentative Mathematics Course of Study for Slow-Learning Pupils, September, 1931, pp. 9-15.

How do you suppose these numbers happen to be called Roman numbers? (If the pupils do not know, the teacher should tell them about the Romans and their use of these numerals briefly and in an interesting manner.)

We have talked about the manner in which primitive people recorded numbers. We have also kept tally. Now we know another way of writing numbers besides the way in which we usually write them. It is called what, Sam? Where is the system used? Are there Roman numbers on our clock? You have found that your book uses them,

What letters are used there? Do you know the value of I? Of V? Of X? Can you write all of the numbers from 1 to 12 with Roman numerals? Do you want to try it? There is a catch in it if you don't know how. Compare your numbers with your watch or with the numbers in the table of contents in your book or on the first few pages of the book. Were you right? Where were you wrong? On 4 and 9? How did you write 4? How is it written in the book? Can you see how they get 4 from that? Yes, you can subtract the 1 from the 5 and that leaves 4. Look at the 9. You can find it written on page 196 in your book. How is it written there? How can you get 9 from IX? Why do you suppose it is written that way? Of course, it is shorter to write 4. IV than IIII, and to write 9, IX than VIIII. Most of the time we have added the values of the letters to get the number. In III, each I has the value of 1. If you add them, it gives 3. In VIII, V equals 5, and each I equals 1. If you add them together it makes 8. We have found that with 4 and 9 we subtracted. Can you see anything about those numbers that is different from the other numbers that might give you a hint that you subtract? We subtract only when a small number comes before a larger number. See, in IV, I comes before V, but I equals only 1 while V equals 5, so we subtract 1 from the larger number, 5. In IX, I comes before X, but I equals only 1 while X equals 10, so we subtract 1 from 10. Do you see how it goes? Can you tell when we subtract?

Turn to page 192 in your book. Notice that Roman numerals are used to number each of the exercises. Can you find these numbers? Beginning on page 192, copy in a column the Roman numerals to the bottom of page 203. Beside each Roman numeral write it as we usually do. After that go through and put a cross after each number where you had to subtract the smaller letter from the larger.

The teacher should move about the room to see that the pupils have the idea and are making no mistakes. It is possible that some classes may not be able to do nearly as much for a lesson as is suggested above. Other classes may be able to do more. If the class is very slow, it may be advisable to stick to reading the numbers, 1, 2, 3, 5, 6, 7, 8, 10, 11, and 12 for the first day. Go no further daily than the ability of the class warrants.

It is more important that the pupils be trained to read Roman numerals than that they learn to write them. However, in order to



get a thorough knowledge of Roman notation, one that will be usable, it is helpful to practice both reading and writing. Give some practice, therefore, in writing Roman numerals, but more practice in reading and interpreting them.

A quick drill, either oral or written, over the work covered must be given daily to maintain the skills developed. Have pupils number the columns in their contests with Roman numerals and use this skill in other ways as opportunity develops. Give pupils much additional oral practice in reading the Roman numbers up to 30. When you feel sure that the pupils have mastered the Roman numbers to 30, check by means of the following exercise:

What is the value of each of the following Roman numerals?

1. I.	11. XV.	21. XXVI.
2. V.	12. XVI.	22. XXVII.
3. X.	13. XX.	23. IV.
4. II.	14. XIII.	24. IX.
5. VI.	15. XVII.	25. XXVIII.
6. III.	16. XXX.	26. XIV.
7. VII.	17. XXV.	27. XXIII.
8. XI.	18. XXI.	28. XIX.
9. VIII.	19. XVIII.	29. XXIV.
10. XII.	20. XXII.	30. XXIX.

When the pupils are ready for it, introduce the letter L and give its value. Have them copy Roman numerals for the exercises on pages 204 to 221 and write the value after each. Again have them mark those numbers in which subtraction is used. Ask the pupils to list and later have them learn to give orally each number in which subtraction is used, as 4, 9, 14, 19, etc., up to 100. Races and contests should be used when the pupils are ready for them.

Do not introduce the work on pages 32 and 33 until you are quite sure the pupils can read the numbers of the exercises in Chapter VIII. The ability of the class should determine how many of the exercises should be given the pupils. Probably the more difficult numbers should be worked out in class. It is not important that the pupils be able to interpret numbers such as MDCCCLIV, but the experience may help to fix in mind Roman notation. Our final tests will include only items falling under the heads listed in our objectives. I am somewhat dubious about the child's needing to know the value of D, but he is likely to need to know the value of the other letters. Give varied types of drill until the pupils have mastered the skills noted.

Suggested content and procedure—drills and games.—A part of each recitation should be devoted to teaching and drilling on the combinations. In so far as possible this drill should be motivated by contests and games. Inasmuch as the first work has to do with tallying, I suggest that the first drill work be done with 10's and 5's. In so far

as is possible, have all pupils working at the same time. The following procedures may be found useful:

Have pupils fold their papers lengthwise into strips wide enough to write a number of perhaps three digits, then unfold the paper. The creases in the papers will help pupils to write their numbers in straight columns. Direct the pupils to begin writing at a given signal. Pupils may write as they would count by tens, or by fives, until time is called. Allow pupils to write until the slowest have time to reach one hundred. Make sure that the figures are written carefully, as well as quickly. Have pupils check their own papers with great care as one of their number reads his responses. If any pupil makes a mistake, have him correct it, give it correctly orally, then beginning a few numbers before the place where the error occurred write the succeeding correct responses.

A card or sheet should be prepared where each pupil may tally daily each race where no errors were made. Those records should be kept in the room in order that they may not be lost. Encourage each pupil to try to beat his own record.

Another record should be kept that will show both the speed and accuracy of the pupils. If each pupil records daily the number of responses made and in a parallel column the number correct, the record will show accuracy and, by comparison with the number of responses made by other pupils, the relative speed.

Practice in counting by fives and tens should include beginning with various numbers as 0, 1, 2, 3, or 4. In this manner drill may be given with various combinations involving five or ten. Care should be taken not to introduce additional elements until the pupils have mastered the ones on which drill is being given. We are striving for mastery.

An interesting relay race may be conducted in the following manner: Two or more teams may be formed, matching the pupils in each team as to ability as nearly as possible. Place the pupils on the opposing teams on opposite sides of the room. The teacher will then place upon the board on opposite sides where each team can work numbers such as 22 and 23. Select the combination on which drill is to be given, as 5. At a given signal the pupils on the front seats go to the board, add 5 to their respective numbers, and write the sum beneath as rapidly as possible. As soon as a pupil is seated, the next member goes to the board and adds 5 to the previous sum. If an error is made and is noticed by one of the succeeding team members, it may be corrected. A line will be drawn through each wrong sum and the first correct sum written at one side. Each pupil may write only one sum before returning to his seat, and succeeding team-mates must continue adding to the correct sum: The teacher may close the contest by calling time, or the race may close as soon as one side reaches some stated goal, such as 100. No credit is given to a team that has an uncorrected mistake. If neither side has made a mistake, the one baving the greater number of correct responses when time is called is the winner, or if a goal is set, the team which reaches the goal first is the winner.

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This relay race may be used with larger numbers when the pupils are ready for it, as, for instance, start with 49 and add 55 to it and to each succeeding sum. The race may also be adapted for use with subtraction and multiplication.

15. JUNIOR HIGH SCHOOLS, ELIZABETH, N. J.

Plan continued from the elementary school.—The plan of grouping in the elementary school is continued in the junior high school. Five levels are formed on the basis of teachers' ratings and results of intelligence and achievement tests. All grouping is regarded as tentative and may be altered whenever the principal and the teachers think a change will be advantageous to the pupil.

Effect of differentiated curriculums.—Considerable difficulty of maintaining the original classifications arises in the eighth and ninth grades because of differentiated curriculums.

14. HAMPSTEAD HILL JUNIOR HIGH SCHOOL, NO. 47, BALTIMORE, MD.

Basis of grouping.—Pupils upon entrance to grade 7-B are classified according to all available information concerning their school history. This includes teachers' ratings, achievement tests, mental ages, and chronological ages.

Provision for acceleration.—Three class sections are selected because they are rated as "good" or "excellent." The group of teachers in charge of these three sections make such shifts during the 7-B semester as are necessary to keep the most capable pupils in one class and the next best in a second class. The pupils remaining in the third class at the end of the semester are those not likely to profit by a program of acceleration.

At the end of the 7-B semester all pupils in the best class section and most or all of those in the second-best class section are promoted to the 8-B grade. The third class receives the usual promotion into the 7-A grade.

The remaining unaccelerated pupils are regrouped for the work of grade 7-A. This regrouping is made chiefly upon the basis of their achievement in grade 7-B.

Upon entrance to grade 8-B pupils are separated by their choices of curriculum. However, they are regrouped within each curriculum.



A little regrouping takes place when the pupils enter grade 8-A. A final grouping is made in grade 9-B.

In each curriculum—academic, commercial, and technical—the most capable pupils of the first and second accelerated class sections have an opportunity to complete grade 8 in one semester. No acceleration is permitted in grade 9.

15. PROVISO TO WNSHIP HIGH SCHOOL, MAYWOOD, ILL.

Diagnostic tests in English.—Diagnostic tests in English serve three purposes in this school. On the basis of these tests (1) pupils are admitted with advanced standing in English, (2) pupils are classified into homogeneous groups, and (3) the content of some of the courses is determined by the pupils' weaknesses and difficulties, as revealed by the test.

Prognostic tests in French and German.—A large percentage of the pupils in this school speak German in the home. A prognostic test in German permits the classification of many pupils beyond the beginning class.

Both the beginning French and the beginning German classes are divided into two groups on the basis of scores made on prognostic tests. The teachers report that they must go more slowly with the slow group, lessen the amount of word study and conversational drill, and spend much time in teaching the rudiments of English grammar. As a rule the pupils scoring low on the prognostic test have poor study habits and low mental ability.

The modern language department regards the test as a fair measure of the papils' language ability. The department also believes that the results of the test, considered along with the intelligence quotient, could be better used in guiding pupils lacking language ability away from language courses rather than in classifying pupils within the courses.

Grouping in Latin.—First-year Latin pupils are not segregated into homogeneous groups. Two levels of ability are provided for in the second year. A superior class is formed which consists of the very best pupils. The second group is more heterogeneous than the superior group yet contains a much narrower range of ability than would obtain under the conditions of chance grouping. To make transfers easy from

one section to another two Latin II sections are scheduled for each period.

There is a distinct difference both in the quality and the quantity of the work done by pupils of these two levels of ability. The superior group easily accomplishes much extra work in English reading of an historical or cultural nature, in sight translation, and in composition. The chief differences in the amount of work done by the two levels lie in translation, in library reading, and in prose composition. Both groups must finish a minimum set of requirements.

A special section is provided for pupils who are too weak in language to maintain even the pace of the slower group. Latin as an aid to better English usage is emphasized in this class.

The advanced classes in Cicero and Vergil are not grouped. Grouping in mathematics.—During the first week of school all pupils registered for the first semester's algebra course are given a test prognostic of ability to succeed with algebra. The pupils of each period are divided into groups on the basis of the results of these tests. The number of groups for any given period depends upon the number of class sections scheduled for that period. The members of the department regard the scores from a prognostic test as one of the most effective bases of grouping which they have so far used.

Another phase of classification in mathematics in this school is illustrative of the close relationship between homogeneous grouping and special classes which are discussed in detail in the next chapter of this report. During the second semester those pupils who were failing or nearly failing in their first semester's work in algebra are segregated for special attention. These special classes are scheduled for lengthened periods during the second semester. The pupils review the first semester's work and complete the work of the second semester. They succeed far better than the weakest pupils in ordinary classes.

In all sections of first-year algebra the units of work mastered are essentially the same. Presentation, choice of exercises, and the amount of work done varies with the ability of the pupils and with the ability of the teacher.

Pupils in tenth-grade geometry are grouped on the basis of teachers' judgment formed through observing the pupils' performance in ninth-grade algebra. The slow groups use special work-books and new-type tests.

An attempt to organize a class for slow pupils in eleventhgrade mathematics has proved only partly successful because of conflicts in pupils' programs and lack of modified content.

Pupils in trigonometry and college algebra in the twelfth year are ungrouped. Only a small percentage of pupils take these courses and they are a highly selected group.

16. MONTCLAIR SENIOR HIGH SCHOOL, MONTCLAIR, N. J.

Special groupings.—By far the greater proportion of pupils in Montclair are looking forward to college entrance. The following special groupings are found valuable:

	Grade	Group	
English	10	1	Have mastered the fundamentals.
	10	2	Have difficulty with the fundamentals.
	10	3	Have language difficulties and poor English records.
	11	1	Are preparing for college.
	11	2	Are not preparing for college.
	12	1	Are recommended by English department for outstanding ability in English.
	12	2	Are preparing for college.
	12	3	Are not preparing for college.
Latin	.10	1	Have shown marked ability in Latin.
	10	2	Are an average group in Latin.
	10	3	Are a slow group in Latin.
	11	1	Have marked ability in Latin.
	11	2	Are average or above in Latin.
	12	1	Are preparing for college entrance board examinations.
	12	2	Are not preparing for college entrance board examinations.
French	10	1	Began French in grade 9 and have made marks of A or B.
	10	2	Began French in grades 7 or 8.
	11	1	Are a fast group.
	11	2	Are a slower group.
	12	1	Are especially capable and are candi-
			dates for Cp. 4 college entrance board examination.

Grade	Group	Pupils assigned
12	2	Are preparing for Cp. 3 college entrance board examination or for fourth year of French with diploma credit but no college credit.
10	1	Are preparing for college entrance board examinations.
10	2	Are preparing for college certificate.
10	3	Are a noncollege group.
11	1 /	Are preparing for college entrance board examinations.
11	2 /	Are preparing for college certificate.
12	1 /	Are preparing for college entrance board examinations.
12	2 /	Are preparing for college certificate.
12	8 /	are not preparing for college.
10		are usually juniors and seniors who are preparing for college entrance board examinations.
10	2	
10		Are preparing for college certificate. Are not preparing for college.
	12 10 10 10 11 11 12 12 12 10	12 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

These special groupings furnish excellent illustrations of grouping based on the aims and the objectives of pupils as well as upon past achievement.

Grouping in physical education.—Montclair has also worked out an interesting method of grouping boys for physical education. The grouping takes place within the class section and is based upon the number of points made by the boy on a physical-capacity test devised by the instructor, Clarence Woodman. The following events are used and have a percentage weight in the total score as indicated:

	Events	Per cent of total
1.	Dash—170 yards on indoor track	score
2.	Football throw—five throws at a 4 by 6 foot target from a	
9	distance of 40 feet	3
0.	Shot put (8-pound shot)	10
4.	Standing broad jump	4
5.	Running high jump	0.5
8	Pull-up (chinning)	25
7	Pull-up (chinning)	25
1.	Basketball throw—five throws from foul line	3
	Total.	100

The method of scoring each event is as follows:

- 1. Dash—Subtract actual time made from 30 and multiply the difference by 25.
- Football throw—Target marked with five circles counting 1, 2, 3, 4, or 5 points. Five throws allowed. Total possible score is 25.
- 3. Shot put—Change distance of "put" to inches and divide by 5.
- Standing broad jump—Change distance of jump to inches and divide by 2.
- Basketball throw—Multiply number of baskets made by 2.
- 6. Running high jump—Change distance of jump to inches and multiply by 5.
- 7. Pull-up-Multiply number of "pull-ups" by 10.

A class of 42 pupils is divided into six squads of seven pupils each on the basis of the total score on the tests. In games squads 1 and 2, squads 3 and 4, and squads 5 and 6 play together, thus insuring competition between those of nearly equal ability. When skills are being taught one or two squads are taken at a time.

Boys in squads 4, 5, and 6 are marked on the basis of improvement which they make after the first test. A class chart is maintained on the wall so that boys may check their own improvement.

The test is repeated every marking period and takes three periods of 43 minutes each to give. The squad leaders record the pupils' actual performances on the test on a 5 by 8 inch card which carries across the top the names of the events and at the left the names of the squad members. When all events are completed the squad leader computes the total score and records it on the class chart.

17. SHORTRIDGE HIGH SCHOOL, INDIANAPOLIS, IND.

Report of the special committee on slow sections.—The committee reported a tendency in Shortridge to assign many pupils of average ability to slow sections. The committee recommended that special attention be given by the teachers to the question of transferring pupils with intelligence quotients above 90 back to average sections.

The recommendations of the committee may be summarized as follows:

1. Incapacity to learn is the only just cause for assigning a pupil to a slow section.



- 2. Insufficient ability should be determined by six weeks' trial in an average section and by the administration of at least two different intelligence tests.
- 3. Each department should study the slow sections and devise a course of study, both subject matter and method, which will be most profitable to them.
- 4. The amount of credit to be given for such courses should be determined after the courses are devised and have been subjected to experimentation.

Segregation in chemistry.—For about 12 years pupils in chemistry have been segregated on the basis of teachers' judgment concerning their abilities to master chemistry. During the first semester the teacher aims to present a common background of facts and information as a basis for the work of the second semester. During the second semester the very bright and the very dull are segregated. In February, 1931, there were 300 chemistry pupils who had entered Shortridge in September, 1930. Two sections, or approximately 50, of the brightest pupils and a similar number of the dullest pupils were segregated for the second semester's work. Because of their advanced grade these dullest pupils usually have intelligence quotients well over 100.

Segregation in English.—The plan followed in the English department varies from that followed in the chemistry department in one respect only. The period of trial and observation is reduced from one semester to six weeks. At the end of the first 6-week period the pupils are reclassified on the basis of the teacher's judgment concerning their ability to meeter English.

to master English.

Segregation in history.—In the elementary schools which contribute pupils to Shortridge provisions are made which permit capable pupils to earn some advanced high-school credits before entrance to high school. These pupils upon entrance to Shortridge are segregated in history. The basis of selection or of grouping, therefore, is the ability to earn some high-school credits before entrance to high school.

Segregation in Latin.—Since 1922 pupils beginning the second year of Latin have been segregated into two groups; the first group consists of those pupils who expect to take more than two years of Latin, or who are preparing for



college-entrance examinations; the second group consists of pupils who expect to take only two years of Latin. This second group does not consist exclusively or even mainly of pupils who have failed in first-year Latin, or of pupils of low ability. The segregation is based upon needs, aims, or interests rather than upon ability. There are usually four class sections, or about 120 pupils each semester in this second group. The work which has been done by E. M. Hughes in creating a modified content ⁵ for this second group merits commendation.

Instead of the traditional second-year Latin course in Cæsar, the content consists of:

- 1. Word groups based on the first 12 chapters of Cæsar.
- 2. Concept groups in which the English has made great use of Latin or Greek.
 - 3. Latin and Greek root-word elements.
 - 4. Latin and Greek prefix elements.
 - 5. Latin and Greek suffixes.

There are 77 word groups based on the Cæsar text, or about six or seven groups for each chapter. The following group is taken from the list for chapter 1: Precedent, precedence, predecessor, antecedent, decedent; accede, concede, intercede, recede, secede; accession, concession; procession, procession, procession, secession; accessory.

Of the 40 concept groups the following is illustrative:

Authority, personal power.

Latin—Auctoritas (from augere, to increase) authority, author.

Imperare, imperatum, to order—imperial, imperious, imperative,

emperor, empire.

Greek—Arche, preeminence, first in rank—archangel, archduke, arch-

racy, democracy, monocracy, theocracy.

bishop, architect, archipelago, oligarchy, monarch.

Kratos, power, authority—democrat, aristocrat, plutocrat, autoc-

Finally, the course consists also of about 215 Latin root-word elements, of approximately the same number of Greek root-word elements, and of several pages of prefixes and suffixes.

Mr. Hughes's interesting teaching procedures combined with the fascinating nature of the content enables the pupils

¹ Hughes, E. M. Derivative Groups. The Classical Department, Shortridge High School, Indianapolla, Ind., 1928.

to arrive inductively at the meanings of vast numbers of English words. They acquire tools with which to interpret new words as these occur in their reading and they develop a fine discrimination in the use of words.

18. JUNIOR HIGH SCHOOLS, DENVER, COLO.

Differentiated assignments in English.—For the junior high school grades the committee sets up first plans for pupils of average ability. These plans cover the following phases of the work:

(1) Literature—including poetry, short story, drama, books, informal essay, and individual home reading.

(2) English expression—including written expression, oral expression, grammar, usage, and mechanics of form.

General objectives.—In general, the abilities and appreciations to be cultivated in the pupils through the reading of the various types of literature are stated as: Enjoyment of action and events; ability to visualize the things read and to interpret them in terms of experience; ability to grasp important ideas; ability to state the theme; appreciation of especially vivid scenes; stimulation to thought.

More specific aims and purposes.—Next the purpose and general procedures for each topic listed under literature are formulated. The formulation for individual home reading is given verbatim as follows:

The purpose of this reading of books beyond the requirements of the classroom work should be to give experience in fields not already explored by the pupil, or greater exploration of some field of particular interest to the pupil. His choice will doubtless change from field to field.

Although it seems advisable to set up lists of books appropriate to the different grades, the teacher should freely accept books from lists above or below, or titles suggested by the pupils. Here wise teacherguidance of individual pupils is very important.

Children are reading modern literature of one kind or another. It will be difficult to replace this with classics, because the classics will in many cases be too difficult. New standards by which to judge this mass of modern material will have to be set up by the teacher for herself in order to give wise direction toward interesting wholesome material and to develop pupil standards in terms of their individual tastes.

Immediate interests of the pupils must be kept in mind at all times. All supplementary lists need to change often. Wise teachers will keep

in touch with the new publications that are constantly leaving the press.

Any records that seem necessary beyond the library-card records must be of such a nature that there is not the slightest danger of its becoming formal or in any way a burden. The desire should be to share with some one else the pleasure of a book enjoyed.

The matter of remedial reading must be considered for some pupils in the medium groups as well as for the limited groups. The procedure for the medium groups will be based upon stories which will pull the pupil along rather than upon any work-type reading or material from content subjects.

The plan for English expression is stated as follows:

The work in English expression is planned on the basis of functional centers selected with reference to the present personal and social needs of the pupils. Although it seems necessary to set up definite functional centers to be emphasized in each half grade, there is a desire to maintain flexibility within these limits in order that the teacher may feel free to make the best adaptation of the work to her particular group. To this end several other centers are suggested for each half year. Each teacher should have a complete picture of the normal processes of growth in ability to speak and write, and thus be able to take the child at the stage of growth he has reached, without too much regard for grade placement, and help him forward through succeeding stages.

In the following brief summary for each semester, the functional centers are listed (the principal functional center is underlined) and the major objective for the work of that semester is stated, together with a suggestion of some means by which to accomplish it.

Self-help questions or standards for appraisal will be set up for some center in each half grade. Examples of what these will be are found with the written expression for 7-B and oral expression for 8-B.

Illustrations from grade 7-B.—The ensuing illustrations constitute a summary for grade 7-B. They will show the content and suggest the classroom procedures which are proposed by the committee for pupils of medium ability. They are intended as illustrations of methods of differentiation not as arguments for or against any particular content.

Written Expression

Functional centers: Friendly letter, excuses, minutes-

Learning to express one's ideas in writing in language which is simple, accurate, and clear, through practice in writing letters which pupils desire to write to friends or relatives about things of real interest to the pupils, or by writing letters to children in other cities or foreign lands.



Self-help questions on the friendly letter-

Content: Have I remembered all of the time that I am writing to John? Have I thanked him for favors received? Have I answered his questions? Have I asked about his own plans and hobbies? Have I told John about the persons and things in which he will be interested? Have I told too many things? Have I said anything that I shall wish I had left out when he reads the letter? Have I written as I would have talked to him?

Form: Have I used the approved form? Does it look well on the page? Have I spelled and punctuated as well as I can?

Oral Expression

Functional centers: Story-telling (personal experiences), conversations, announcements, and meetings—

Learning to entertain an audience with some freedom and ease by giving experiences of interest to the pupils themselves. These might be based on home or school activities, or upon travel.

Usage

Learn by repeated use and not by grammatical reasons:

- 1. To use correctly the past and past participle of sec, do, bring, come, go, run, give, write, begin, and ring.
 - 2. To use other forms instead of ain't, could of gone, and could a gone.
- 3. To use correctly the following forms: (1) He and I will go. (2) Give it to Elsie and me. (3) Tom is taller than I. (4) Give the ball to John or me. (5) We girls went. (6) John said (instead of John he said). (7) He and I rather than I and he.

Grammar

The Sentence.

Sentence sense: Definition of the sentence; complete predicate and complete subject; verb and simple subject; compound predicate and compound subject; punctuation of sentences; use of compound sentence for variety and to eliminate the run-on sentence.

Mechanics of Form

Form of paper.

Legible writing.

Form for friendly letters.

Capitalization.

Names of people, and places; all words used in proper nouns as street; first word of a sentence; first word of each line of poetry; important words in a title.

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Punctuation.

Use of comma (1) in letters, (2) between city and State, (3) between month and year, (4) after salutation, (5) after complimentary close. Use of period (1) at end of sentence, (2) after abbreviations, (3) after initials, (4) after figures and letters used in numbering.

The Denver Committee on English states that a complete course in language work and literature is being worked out for limited-ability groups. At the time this report is being made, however, tentative plans are set up only for usage and mechanics of form.

Mechanics of Form and Usage for Groups of Limited Ability.—The preceding illustrations for usage and mechanics of form for average pupils may now be compared with the following illustrations of the same topics as differentiated for pupils of limited ability.

Usage

Use correctly the past and past participle of see, do, bring, come, go, run, give, write, begin, ring. Use correct forms instead of ain't, could of gone, and could a gone. Know that a noun is a name word.

Acquire through drill, sentence sense and knowledge of end punctuation. Recognize subject and predicate. Combat run-on sentences and incomplete sentences.

Mechanics of Form

Form for written work; capitalization of (1) the first word of a sentence, (2) all proper nouns, (3) the word I; form for friendly letters—punctuation required in this form.

Differentiation in the senior high school.—The plan for differentiation of English in the senior high schools of Denver, Colo., is set forth in Figure 39. A common course for average and superior pupils, where necessary differentiation grows out of tangential problems, has much to recommend it. The plan provides a modified content only for pupils of limited ability. This is exactly the type of differentiation which would be needed in schools where only pupils of limited ability were segregated.

^{*} Billett, Roy O., op. cit., pp. 117-118.

ENGLISH - SENIOR HIGH SCHOOL

REQUIRED COURSES

	Liter	ature: Two Bemsters					
	Orede 108	Gredes 11	or 18				
Pupils of medium or superior ability	108 Literature A general course based on types — two-track course	Choose one: Contemporary Literature - two-track course; American Life as Inter- preted in American Literature two-track; English Literature - two-track (college preparatory)					
Pupils of limited chility	10B Literature Modified Content	Choose one: Contemp Modified Content; Am preted in American I Content	erican Life as Inter-				
	Compos	ition: Teo Senesters					
	Grade 101	Gredes 11	or 18 ,				
Papils of medium or superior ability Papils of limited ability	10A Composition Modified Content>	Pupils whose works— was of average quality or better in 104 Compo- sition Pupils whose effort in 104 Composi- tion was satisfactory but whose attainment was unsatis- factory					
		ELECTIVE COURSES					
	Grade 10	Gredes 11	or 12				
Apils of medium or mperior ability, and, where edvic- able, pupils of limited ability	•	prerequisite to 2); l; Plays and Play Pr requisite to 2); Her requisite to 2); and	Ablic Speaking 2 (1 is Plays and Play Production oduction 2 (1 is pre- suriting 2 (1 is pre- lany course which the ty used to meet a require-				

FIGURE 39.—Two-track plan for differentiating English in the senior high schools of Denver, Colo.

19. SOUTH SIDE HIGH SCHOOL, FORT WAYNE, IND.

No slow groups formed in grades 11 and 12.—In this high school the fact is recognized that pupils of below normal ability, mentally, are eliminated from high school before entrance to the eleventh grade. (Table 43.)⁷ Commercial

Ibid.

pupils are required to take English I, II, III, IV, VII, and VIII. All other pupils must take all courses except English V.

Table 43.—Levels of ability provided for in senior high school English, South Side High School, Fort Wayne, Ind.

English	O	roups form	red		Groups formed			
E nguan	Slow	Average	Fast	English	Slow	A verage	Fast	
1	3	3	4	1	*	3	4	
i II III	X 1 X X X	X X X	X X X	V VI VII	(1)	(*) X X	(*) X X	

¹ X indicates levels for which groups are formed.

There is no homogeneous grouping in English V, which is elective. Only average and bright groups are formed in English VI, VII, and VIII. Any pupils of ability below normal who may remain to elect English VI, VII, or VIII are placed in the average group.

College certification.—A mark of "B" or better is required in the average group for college certification.

10. JUNIOR HIGH SCHOOLS, CLEVELAND, OHIO

A thoroughgoing effort.—A thoroughgoing attempt to differentiate subject matter for groups of different abilities has been made by a committee on the course of study in mathematics of which William L. Connor, Bureau of Educational Research, Cleveland, Ohio, was chairman.

Method of grouping in Cleveland.—On the basis of group mental tests supplemented by individual psychological examinations the pupils are segregated into three groups, the X groups having a probable learning rate of 110 or above, the Y groups 90 to 109, and the Z groups 89 or below.

Certain schools are also able to provide further segregation in the form of special classes for pupils of intelligence quotients of 125 or above, for pupils with intelligence quotients of 70 to 79, and for pupils with intelligence quotients below 70.

¹ Elective no grouping.

Objectives of education first established.—The committee agreed first upon certain general objectives of education. Next the general objectives of mathematics were formulated. Those general objectives were then selected with which the junior high school should be concerned.

Three principles of differentiation.—The committee worked on three assumptions. First, bright pupils can do more difficult tasks than slow pupils; second, bright pupils can do the same work at a faster rate than the slow; third, bright pupils can master and will have need for a wider range of materials than the slow.

An outline can not replace the teacher.—The probable needs of the pupils of each ability level played a prominent part in determining the materials to be included in each course. Moreover, the committee emphasizes that no outline can take the place of the teacher in so presenting a problem that it will challenge the slow pupil without discouraging him. All X groups are not alike nor all Y groups, nor all Z groups. Only the teacher can make proper differentiation of subject matter and procedure on any level.

Differentiated work for the first half of the seventh year.—
The outline as submitted by the committee is arranged on the printed page in three columns, one for each level. Since the courses for the Y and Z groups are derived from the course for the X group it is possible to indicate the differentiation by first reproducing the course for the X group and then marking with a Y those items which are omitted in the Y group and with a Z those items which are omitted in the Z group. The outline of the work for the first half of the seventh year follows:

- I. Aim: To use in thinking about the common quantitative problems of the home, school, business, workshop, and community, the following:
 - A. Tables and graphs. Distribution of the family income and expenditures; school attendance; test results; changes in prices; (Z) distribution of city income and expenditures; and other data available in the social studies (only the simpler data presented to Z groups)—
 - 1. Bar.
 - 2. Line.

- I. Aim: To use in thinking about the common quantitative problems of the home, school, business, workshop, and community—Continued.
 - (YZ) 3. Bell-shaped surface of frequency.
 - 4. Circle. To read circle graphs, not to prepare them.
 - 5. Picture. Judging the adequacy of picture graphs.
 - B. Percentage. Mainly its use in buying and selling.
 - Standings in attendance, tests, and games expressed in percentages.
 - 2. Discounts
 - (a) For cash payments.
 - (b) In special sales.
 - (c) In quoting prices.
 - 3. Commission for-
 - (a) Buying.
 - (b) Selling.
 - 4. Gains and losses in terms of percentage of-
 - (a) Purchase price.

 Selling price.
 - 5. Fixing prices as a problem involving percentage.
 - (YZ) 6. Inventories. Appraisal and depreciation in terms of percentage of cost.
 - Keeping accounts of personal income and expenditures.
 - (YZ) 8. Budgeting income and expenditures.
 - 9. Keeping account of purchases and sales of merchandise.
 - (Z) 10. Property insurance. Valuation and rate of premium as percentage.
 - C. Special problems in buying and selling-
 - 1. Paper work-
 - (a) Sales slips.
 - (b) Orders.
 - (c) Invoices and bills.
 - (d) Receipts.
 - 2. Paying bills by-
 - (a) Cash.
 - (b) Check.
 - (c) Postal money order or telegraph.
 - (Z) 3. In traveling, carrying money in the form of—
 - (a) Cash.
 - (b) Drafts.
 - (c) Traveler's checks.
 - 4. Profit as wages.
 - 5. The expense of selling and the risk of loss.

- II. Aim. To have purils acquire the understanding and skill useful in facile and accurate quantitative thinking, as follows:
 - A. Reading and writing numbers to trillions. Emphasize numbers less than a million. (For Y group, reading and writing numbers to millions; for Z group, reading and writing numbers less than a million.)
 - B. Performing the four fundamental operations upon-
 - Decimals. (Both common and decimal fractions for Y and Z groups.)
 - 2. Percentages.
 - 3. Denominate amounts including (Z)* fractional parts.
 - 4. Changing denominate amounts to same units, including (Z) s fractional parts.
 - Checking work by approximations, by repeating in the same or different order, and where practicable by (YZ) s reverse process.
 - C. Deciding when to add, subtract, multiply, and divide in thought problems.
 - D. The meaning and use of the equation in problem-solving.

 (No formal algebra for Y and Z groups at this time.)
- III. Aim. To have the pupils acquire an understanding and a critical appreciation of present-day number systems and notations in comparison with those of other times and lands. (Critical appreciation omitted for Y and Z groups.)
 - A. Arabic numerals and the decimal system.
 - B. Roman numerals and the special rules for writing them.
 - (YZ) C. The theoretical advantages and disadvantages of a radix of 5 (quinary system), 10 (decimal system), or 12 (duodecimal system) in a system of numbers.

This brief presentation will serve to give some notion of the work of the committee. Those whose interests are more detailed may consult the printed course of study. Besides giving a complete course of study for mathematics in grades 7, 8, and 9, the volume contains systematically arranged references, lists of materials suggestions for assignments, and suggestions for teaching procedure.

Enrichment classes for gifted children.—For the past eight years Thomas Jefferson Junior High School has cooperated with West High School, Cleveland, Ohio, in an outstanding experiment in the segregation of pupils of unusual ability. A separate program has been maintained by both schools for

Material at right of exponent not required for groups indicated.

Board of Education, Tentative Course of Study in Mathematics for Junior High Schools Cleveland, Ohio, 1928-29.

these highly capable children. The first of these "enrichment" classes completed its second year in college in 1932.

Method of selecting these pupils.—The children who enter these enrichment classes come from the grade schools of the western half of Cleveland. Prospective candidates for admission are discovered either through their outstanding performance on a group mental test, which all Cleveland school children must take, or through discovery by classroom teachers of what appears to be unusal ability. All candidates for the classes are given the Stanford-Binet individual test by an expert in the psychological clinic. If the pupil possesses an intelligence quotient of 130 or more he may enter the enrichment class at Thomas Jefferson Junior High School.

Relation of the work of the enrichment classes to the regular course of study.—Principal Arthur Seybold has steadfastly maintained the policy of securing enrichment for these classes by means of tangential interests which take their origin in the regular course of study. The teachers of the enrichment classes have endeavored to organize the regular course of study into units or problems to facilitate the development of tangential interests.

French and general science, both introduced in grade 7-B, are the only additions to the regular program of studies for the classes. Membership and office in the extracurriculum and "social activities," such as clubs, student government, musical organizations, and athletics, are open to the pupils of the enrichment classes on the same basis as to the regular pupils.

Segregation of gifted pupils.—Pupils of the enrichment classes are segregated only in academic subjects namely, English, social science, general science, mathematics, and French. Five teachers are selected to have charge of these academic classes. In all remaining subjects the gifted pupils are scheduled along with the rank and file of pupils, a logical policy, since these children have been selected on criteria which are primarily academic and which correlate rather low with criteria of ability to succeed in fields other than the academic.

Sample lessons for different types of segregated groups.—The following four lessons are reproduced from a large number of such lessons which are planned for groups of different abilities in the Thomas Jefferson Junior High School, Cleveland, Ohio.

A sample lesson in history for a gifted class

Teacher	Edna F. Voldan.	Subject	History.
Class and section	7-A High I.Q.	X, Y, or Z group	High I.Q
Date of reci- tation	Feb. 16 to Mar. 6.	Periods required	10.
Size of class	36.	Approximate num- ber of lessons of	1.
	•	this type teacher has taught this term	

Purpose:

To appreciate the character and ideals of the colonists.

To appreciate the value of good leadership and personality.

To develop the ability to organize material and present it in an interesting manner.

Outline:

 Through discussion and from previous knowledge, list the colonies important in early American history.

2. Divide class into groups, each group choosing a colony as its topic and choosing a leader.

3. Each group reads generally on its topic. Then the group gets together and plans method of presentation, material to be presented, and all the aids used in presenting material. The leader then brings that plan to the teacher to be approved. Here the teacher has a chance to suggest material the group has omitted.

4. The material is then presented, and after the presentation the class may add to, suggest, or criticize the work.

(The following is one such outline 10)

Outline made by group to present the colonization and growth and development of the "Plymouth Colony."

1. History and first year

Jack Bowers.

2. People

Dorothy McCullough.

- (a) Religion.
- (b) Dress.
- (c) Customs and life.

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³⁸ This is merely the general outline for the group. Each pupil had his own detailed outline also.

Outline made by group to present the colonization and growth and development of the "Plymouth Colony-Continued.

3. Part the colony took in the wars

Edward Lewis.

Growth and development

Norma Dolezal.

5. Scenery

Jack Bowers.

Aids

I.

1. Play—The Signing of the Mayflower

Jack Bowers:

2. Play-The First Thanksgiving

Jack Bowers.

3. Pictures.

4. Poems—Old Ironsides—O. W. Holmes. Concord Hymn-R. W. Emerson.

II.

1. Play—Housebuilding 2. Play-Planting Corn

Dorothy McCullough.

Dorothy McCullough.

3. Excerpts from The Courtship of Miles Standish—Longfellow.

4. Laws.

MI.

Poem--Paul Revere's Ride-Longfellow.

IV.

1. Pictures.

A sample lesson in geography for a class of superior ability

Teacher

Class and sec-

Anna E. McAnar- Subject

Geography.

ney.

7-B-1.

X, Y, or Z Group

X.

10.

tion

Date of recit-

Periods required

One for pres-

ation

April 9.

32.

entation.

Size of class

Approximate num-

ber of lessons of this type teacher

has taught this term

Purpose:

To show that Ohio ranks high in the production of food and other necessities. Problem as stated: What do we owe to Ohio? Idea suggested by question of New York boy-"Why don't we

talk about New York? Ohio can't amount to much."

Outline: Class divided into these committees: "Outsiders"—those born in other places; Comparisons committee—those who compared Ohio in size and productions with other States; Productions committee—those who told about productions.

Procedure:

- 1. "Outsiders" outlined their side-
 - (a) Told where born.
 - (b) Asked questions as work proceeded.
 - (c) Stated that Ohio is a small State and can't amount to much.
- 2. Comparisons committee
 - (a) Told what makes a State rank high as a production center.
 - (b) Compared Ohio with other States in production.
 - (c) Gave reasons for Ohio's high rank-
 - 1. Proper slopes.
 - 2. Fertile soil.
 - 3. Right amount of rainfall.
 - 4. Progressive farmers.
 - (d) Each point discussed.
 - (e) Talk centered on food—opposing side named articles of food eaten recently. Production committee showed that these are all produced in Ohio. Reports given—
 - 1. Corn meal mush-corn.
 - 2. Maple sirup.
 - 3. Bacon.
 - 4. Eggs.
 - 5. Milk.
 - 6. Peaches.
 - 7. Bread-wheat.
 - 8. Apples story of "Johnny Appleseed."
 - 9. Potatoes.
 - 10. Early spring vegetables—hot house culture.
 - 11. Fish.
 - (f) Other productions—
 - 1. Wool.
 - 2. Clothing.
 - 3. Rubber goods.

Equipment used: Maps of Ohio and of the United States, graphs, pictures.

A sample lesson in geometry for a class of low ability

Teacher	Alice P.	Hon-	Subject	Geometry
Class and sec-	man. 8-B-3.		X, Y, or Z group	Z.
Date of reci- tation	April 24.		Periods required	1.

Size of class

Approximate number of lessons of this type teacher has taught this term.

Purpose: To have the pupils appreciate the practical and concrete application of geometry to nature and architecture. Outline:

Materials used-

- 1. A set of slides furnished by the Cleveland School of Education, and
- 2. A set of geometric solids.

Preparation—April 22.

- 1. The slides were shown individually to all volunteering to take part in the program. Some information was given with each slide.
- 2. Each child was asked to show how his slide was related to geometry.

Lesson-April 24.

- 1. To introduce the lesson the common geometric forms and the objects in nature suggesting each were named.
- 2. All geometric forms which were to be shown on the slides were pointed out from a set of forms on the table.
- 3. The slides were then discussed from the screen. They were divided in groups as follows:

(a) The nature slides

Illustrating

(1) The eclipse

Sphere and cone.

(2) The shooting star

Straight line.

(3) Trees in a dense forest

Parallel and vertical lines.

(b) Symmetrical designs in flowers and fruits-

(1) Flowers

(2) Leaves

Central symmetry. Bilateral symmetry.

(3) Fruit—Peaches

Sphere, hemisphere.

(c) Pine cone, mushroom, and ocean growth-

(1) Pine cone

Cone.

(2) Mushroom

Circle, cylinder, dome.

(3) Ocean growth

Sphere, cylinder, circles.

and radii.

(d) Moths and butterflies

Bilateral symmetry.

(e) Radiolarians

Cones and number of straight lines through one point.

(f) Oriole's nest, honeybee's

nest, and spider's web

Hexagonal comb, circles, cone, concentric circles,

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Outline—Continued.

Lesson-April 24-Continued.

- 3. The slides were then discussed from the screen—Continued.
 - (g) Pottery

Spheres, cylinders, cir-

cles, designs.

(h) Baskets

Concentric and circular designs. Quadrilaterals and crossing lines.

(i) Ellesmere Land ice home

Dome, rectangular blocks of ice.

(j) China dwellings

Double lean-to.

(k) Storehouses

Thatched dome.

(1) Airican huts

Circular constructions for strength.

(m) Navajo home life and in- Common forms in vessels, dustries

buildings, rugs.

(n) Mitla restaurant

Modern decoration.11

A sample lesson in history for a low-ability class

Teacher	E. Lillian Pan- cost.	Subject	History.
Class and sec- tion	8A-5.	X, Y, or Z group	Z.
Date of recita- tion	May 22.	Periods required	1.
Size of class	35.	Approximate number of lessons of this type teacher has taught this term	2.

Purpose: To develop an interest in the character and achievements of the man, Theodore Roosevelt.

Outline:

Approach through events of Roosevelt's life that the class recalls. Read clipping from the Literary Digest "Faults and Virtues of Roosevelt as Seen by a California Editor." The class will recognize references to events in Roosevelt's life. They make a list of his qualities: Strenuousness, outspokenness, etc.; another list of his favorite words and phrases: Red-blooded, bully, delighted, big stick; and a third list of the reforms he advocated: The strenuous life, simplified spelling, etc.

Four more reforms he fought for are given in Beard and Bagley on page 588. The class lists them as:

- Against monopoly of trusts;
- Against false labor leaders;



¹¹ Here, all geometric forms are combined in modern decoration, on walls, furniture, fixtures,

' Outline-Continued.

Four more reforms he fought for are given in Beard and Bagley on page 588. The class lists them as—Continued.

3. For the income tax;

4. For conservation of natural resources.

This list is copied in notebooks. A dictionary of unfamiliar words in the paragraph is made on the board. The assignment for next day is given—to find how Roosevelt secured the conservation reform.

Reread from the article above: "Your words were like great bellowing winds that came in, rough and keen, from the ocean. You drove them into our language with the force of a caveman." Asking the class to listen for forceful language, read strenuous selections from Roosevelt's speeches, in which he stresses the need of reform.

Write on the board some of Roosevelt's works that are good outside reading. Describe each book and have the class copy the list.

Other illustrative material available.—Many other illustrations of interesting and valuable practices in the secondary schools in connection with homogeneous grouping could be given in this chapter if space permitted. However, the materials presented are typical of the best which have come to the writer's attention.

CHAPTER VII: SPECIAL CLASSES

1. DEFINITION OF TERMS

Special classes and homogeneous grouping complementary procedures.-In practice, homogeneous grouping merges so imperceptibly into the scheduling of special classes that what passes as homogeneous grouping in one school may be regarded as a series of special classes in another school. Certain illustrations given in Chapter VI, Part I (see secs. 14, 15, 16, 17, and 20) are evidences of this fact. Generally speaking, however, special classes begin where homogeneous grouping leaves off. That is, homogeneous grouping usually provides for pupils of three ability levels, namely, those who are normal, those who are somewhat below normal, and those who are above normal. Special classes are then formed for the remaining pupils who deviate so extremely from the normal that apparently further provision should be made for them. Such pupils may deviate in capacities or in needs or in both. On the one hand they are the very slow or the very capable, on the other hand they are pupils of any capacity who for the time being need special help in overcoming handicaps due perhaps to illness, absence, lack of industry, or deficiencies in the prerequisites of certain courses. Assignment to special classes tends to be permanent if the extreme deviation involves native ability and temporary in other cases. The pupils composing a special class are often extremely heterogeneous.

Special classes considered in this report.—Those special classes discussed in this chapter are mentioned in the educational literature as: (1) Special classes for slow pupils; (2) special classes for failures; (3) opportunity classes for slow pupils; (4) adjustment classes; (5) remedial classes; (6) restoration classes; (7) special classes to accelerate capable pupils; and (8) opportunity classes for gifted pupils. Obviously the terminology is overlapping. The first six may be considered as provisions primarily for the very slow,

the last two as provisions primarily for the very capable or gifted.

t. DATA FROM THE PRELIMINARY INQUIRY

Special classes provided much more frequently for the very slow than for the very capable.—On the preliminary inquiry form, special classes primarily for slow-learning pupils were reported with a total frequency of 8,513 as compared with a total frequency of 865 for special classes primarily for the very capable or gifted. (Table 4, the Scope: A Preliminary View, p. 9.) In other words, special classes are provided about nine times as often for the very slow as for the very bright. Corresponding frequencies of estimated unusual success are 1,472 and 183. The preceding frequencies do not refer to numbers of schools but to numbers of times special classes of one kind or another are reported in use. Often one school reports several him to the special classes.

school reports several kinds of special classes.

Special classes in schools of different sizes. - In general, the use of special classes increases regularly with increase in the total enrollment. (Fig. 40.) The percentage of schools of the largest earollment group reporting opportunity classes for slow pupils in use is seven times as great as the corresponding percentage of schools of the smallest enrollment group. Similarly, special classes for pupils who have failed are twice as frequent, adjustment classes nine times as frequent, remedial classes six times as frequent, restoration classes and opportunity classes for the gifted each seven times as frequent, in the largest schools as in the schools of smallest total enrollment. However, special coaching of slow pupils and special classes to accelerate capable pupils are reported in use about as frequently in schools of one size as of another. An explanation is suggested by the fact that these two last-named kinds of special classes have been found to include a large amount of informal coaching and tutorial work scheduled at study periods or before or after the regular school day. Such work is feasible in schools of any size. The other six kinds of special classes more often involve the segregation of pupils into class sections scheduled at definite periods during the school day. The larger schools are more likely to have enough pupils needing special help to form

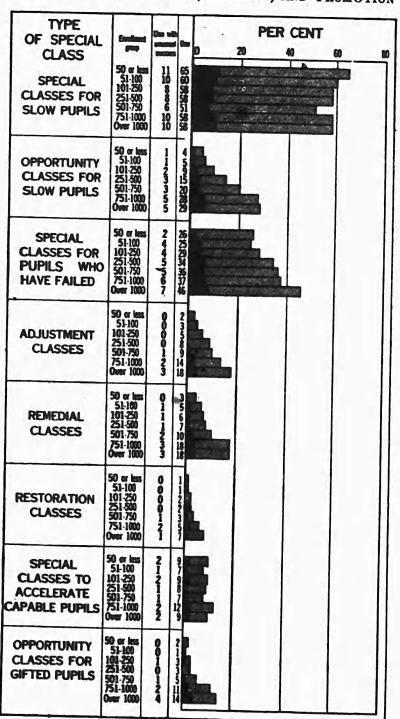


Figure 40.—Percentage frequencies of use, and of use with unusual success, of special classes, primarily for the very slow or for the very capable in schools of different total enrollments. (Percentages based on data from the following numbers of schools: Enrollment group 50 or fewer, 1,476; 51 to 100, 1,994; 101 to 250, 2,301 251 to 500, 1,128; 501 to 750, 561; 751 to 1,000, 304; more than 1,000, 740)

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A transfer de la capación de la capa



one or more class sections and are more able than the smaller schools to find a place for such classes in the daily schedule.

In general, therefore, the relation of special classes to total enrollment suggests by analogy the relation of homogeneous grouping to total enrollment as reported in Chapter III, Part I.

Special classes in schools of different types of organization. Wide differences exist among schools of different types of organization in the extent to which special classes are reported in use. (Fig. 41.) These differences are least pronounced in special classes for slow pupils and in special classes for pupils who have failed. Schools including grades 7-9 occupy first rank in the extents to which five of the eight kinds of special classes are used and take second rank in one more. Schools including grades 6-11 occupy first rank in two cases and second rank in four others. The average proportions of use of all eight kinds of special classes by schools of different types of organization are as follows: Grades 7-9, 23 per cent; grades 6-11, 22 per cent; grades 10-12, 18 per cent; grades 8-11, 17 per cent; atypical grade combinations, 16 per cent; grades 7-12, 16 per cent; and grades 9-12, 14 per cent. In general, the reorganized schools are making considerably more use of special classes than the unreorganized schools, a finding analogous to that reported in Chapter III, Part I, concerning the extents of use of homogeneous grouping in reorganized and unreorganized schools.

Special classes in different geographical areas.—The percentages of use of all eight kinds of special classes, reported by the schools replying from each State, were averaged to get the percentage of use shown for each State in Figure 42. The data show that special classes of one kind or another are widely used by the schools of every State. The percentages of estimated unusual success are comparatively small but fairly constant for all States.

5. SCHOOLS SELECTED FOR INTENSIVE STUDY

The follow-up inquiry.—Schools were selected for more detailed study on the basis of replies to a 17-page follow-up inquiry form. Copies of the follow-up form were addressed to schools whose representatives had estimated unusual

INDIVIDUAL DIFFERENCES, MARKING, AND PROMOTION

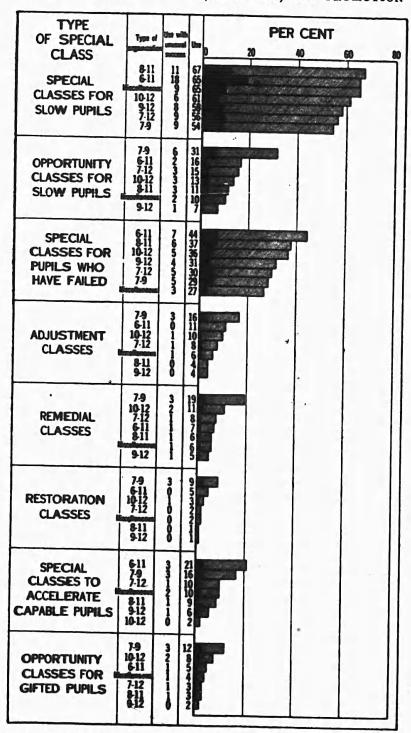


FIGURE 41.—Percentage frequencies of use and of use with unusual success of special classes, primarily for the very slow or the very capable, in schools of different types of organization. (Percentages based on the following numbers of schools: Grades 9 to 12, 4,304; 7 to 12, 1,284; 8 to 11, 638; 7 to 9, 614; 10 to 12, 308; 6 to 11, 105; miscellaneous, 1,341)

STATES	Dank	Rank unresed			PER CENT				
		SUCCESS	Use	0	5	10	15	20	2
LOUISIANA	11	4	24		7 3 00	Wat Rid	100000	5000	- VIE
FLORIDA	2	2	21	100	32000	00/70/100	1985 S. F. W.	Colored	_
NEW YORK	3	4	21		30.27.2	10 to 1000	ADMINISTRATIVE	C2000403	
UTAH	4	2	20	118	tarase	100	200	1500	
GEORGIA	5	2	20	180	A CONTRACTOR	1 - 200 200	ACAM-		
ARIZONA	6	2	20	100	10,000	J 10 194			1
OKLAHOMA	7.5	3	20		Fall III		1780 VA -	-	
TEXAS	7.5	4	20		4	Acres 14	Column Color	1000	
NEW JERSEY	9	4	20		75 4				
NORTH CAROLINA	10	4 .	19		Marie .				- 1
NORTH DAKOTA	lii l	3	19		6-60 MW				
MISSISSIPPI	12	3	19			/ #11x2ev		- 1	
CALIFORNIA	13	2	19					5	M
RHODE ISLAND	14	1	18				The second		
SOUTH CAROLINA	15	2	18	_	-	2 10 5 200			
T ENNESSEE	16	5	18	-					
ALABAMA	17	Ä	18	-			20,200		- 1
KENTUCKY	18	3	17	-				- 1	
WEST VIRGINIA	19	2	16			No. of Concession,			1
OREGON	20	3	16	-				1	
COLORADO	215	1	16	-	-	ALL DESIGNATION OF THE PARTY OF			
DIST. OF COLUMBIA	1	2	1 1	-	-		100000	1	- 1
ARKANSAS	24	3	16	_			Section 1	1	1
LLINOIS	24	-	16	-			1000		- 1
MINNESOTA		2	16		29			- 1	
/IRGINIA	24	2	16		10.00	-365	China I		- 1
DAHO	26	2	16		44.42	2	SEC. 15.	1	- 1
CANSAS		1	15	-325	4		900m	1	
	28.5	2	15	349		of Sala			
NEW MEXICO	28.5	2	15						
	31	2	15	100	300		100		- 1
VASHINGTON	31	2	15	102	400	200	17/2 E		- 1
VYOMING	31	2	15	130	444		W.C.		
ONTANA OHIO	33	1	15		-			- 1	
	34	Z	14						- 1
ELAWARE ERMONT	35.5	*	14						- 1
ISSOURI	35.5 37	3	14	-			1		
ENNSYLVANIA	-	2	14			7000		-1	
ICHIGAN	38	2	14	-			1		
ISCONSIN	39	2	13						
12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	40	2	13			1000		1	1
IDIANA	42	2	13						
AINE .	42	2	13						
OUTH DAKOTA	42	2	13						
EW HAMPSHIRE	44	2	13					1 -	- 1
EBRASKA	45	2	13			1		4.	
AWA	46	2	13						
ARYLAND	47	7	12					1	
ONNECTICUT	48	4 .	12			-0.48			1
EVADA	49	-2-	11				1		

FIGURE 42.—The average percentages of use and of use with estimated unusual success of eight kinds of special classes in the different States

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success in the use of one or more kinds of special classes, and to schools maintaining special classes recommended as worthy of further study by informed persons not directly connected with the schools concerned. From 225 replies to the follow up inquiry, 178 schools were selected as representative of best practices pertaining to special classes. One hundred had forty-nine of the schools thus chosen for intensive study were employing one or another of the six kinds of special classes mentioned in section 1, above, as classes primarily for the very slow pupil. Only 29 were maintaining special classes for the very capable or gifted. A sampling of the 178 schools was later visited and studied at first hand by observation and interview.

A reduction of terms.—In the discussion which follows, the absurdity of maintaining distinctions, where none has been found to exist, will be avoided. Two main categories will be recognized, namely, special classes for slow or failing pupils and special classes for the very capable or gifted. The first category includes special classes for slow pupils, special classes for pupils who have failed, opportunity classes for slow pupils, adjustment classes, remedial classes, and restoration classes as well as other similar terms discovered in the investigation such as "preventive classes" and "corrective classes." The second category includes special classes to accelerate capable pupils and opportunity classes for gifted pupils.

Number of years special classes have been in use.—On the average, special classes have been in use 3.5 years in the 178 schools chosen for intensive study. The range of use extends from one year to 10 years or more. Classes for the gifted have been in use longer than classes for the very slow, the median for the former being 4.5 years as compared with 3.3 years for the latter.

Total enrollments of schools selected for intensive study.—The frequency of the tabulated replies dealing with special classes either for the very slow or for the very capable or gifted increases fairly regularly as the total enrollment increases. (Table 44.) The schools chosen for intensive study of special classes for the very slow include more than three times as many schools with total enrollments of more than 1,000

as schools with total enrollments of 100 or fewer. (Columns 2 and 3, Table 44.) Similarly the schools selected for best practices in connection with special classes for the very capable or gifted include 13 times as many schools with total enrollments of more than 1,000 as schools with total enrollments of 100 or fewer. (Columns 4 and 5, Table 44.) The data suggest that special classes operate successfully much more frequently in large schools than in small.

TABLE 44.—Special classes for the very slow and for the gifted in selected schools of different sizes

	The ver	y slow	The	dited	То	tal
Enrollment group	Fre- quency	Per	Fre- quency	Percent	Fre- quency	Percent
1	2	3	4		•	7
50 or fewer	5 13	3 9 18	1	4 14	5 14 30	3 8 17
251 to 500	23 25 57	15 17 88	4 7 13	14 24 44	27 82 70	15 19 40
Total	149	100	29	100	178	100

Types of organization of schools selected for intensive study. Thirty-five per cent of the schools chosen for intensive study with respect to their special classes for the very slow are unreorganized schools, 56 per cent are reorganized schools. and 9 per cent possess atypical grade combinations. (Column 3, Table 45.) Moreover, only 17 per cent of the schools selected because of the unusual success of their special classes for the very capable or gifted are unreorganized schools. while 76 per cent are reorganized and 7 per cent have atypical grade combinations. (Column 5, Table 45.) Nearly half the schools reporting special classes for the very capable or gifted are schools including grades 7 to 9. These facts strengthen the belief that special classes are meeting with unusual success much more frequently in the reorganized than in the unreorganized schools. Of all reorganized schools those including grades 7 to 9 or grades 7 to 12 seem to be using special classes with most success.

TABLE 45.—Special classes for the very slow and for the gifted in selected schools of different types of organization

7	The ver	ry slow	The	gifted	То	tal
Type of organization	Fre- quency	Per	Fre- quency	Per	Fre- quency	Percent
1	2	1	4			7
9 to 12	48	82	5	17	53	30
7 to 9	29	20	13	45	42	30
10 to 12	38	25	7	24	45	24 24
to 11	8 9	5	2	7	10	6
All others	13	6	2	7	15	5
Total	149	100	29	100	178	100

Geographical areas represented by schools selected for intensive study.—Every geographical area is represented by the 178 schools selected for intensive study. (Table 46.) As might be anticipated from the data of the preliminary inquiry (Fig. 42), New England is not so well represented as other sections. The term "restoration class" is least frequently preferred, appearing only in reports from the Middle Atlantic and the Middle West.

Table 46.—Geographical areas represented by schools selected for intensive study with respect to special classes

Type of special class	Geographical area					
	New Eng- land	Middle At- lantic	South	Middle West	West	Total
1	1	3		1		7
Special classes for slow pupils. Special classes for pupils who have failed. Opportunity classes for slow pupils. Adjustment classes. Remedial classes. Restoration classes. Special classes to accelerate capable pupils. Opportunity classes for gifted pupils.	7 2	18 8 6 1 6 4 1 8	11 3 9 1 2	21 4 7 3 6 3 6 3	5 4 8 6 4	62 21 30 11 18 7 16
Total	10	52	31	53	82	178

4. NEEDS MET BY SPECIAL CLASSES

Reasons for establishing special classes. - A great part of the story of special classes is told when the reasons for establishing them are related. Stated in general terms the replies show that special classes primarily for the very slow have been created because, even when all other provisions for individual differences are functioning efficiently, a certain small percentage of the pupils are unable to succeed with the regular school work without additional special help. The pupil's lack of success may be due to insufficient ability. either of a general or specific nature; to absence from regular classes, either intentional or otherwise; to unwillingness to work; or to any one of a number of adverse circumstances which may have imposed upon him a handicap which makes it impossible for him to achieve success in the regular classes. Often the pupil suffers from a complication of the retarding influences just mentioned. Whatever the cause, the fact remains that help of an individualized nature is needed.

The data show that special classes are most frequently established to enable slow pupils to compensate for lack of native ability to master academic subject matter. In such cases pupils are taught how to study and how to budget their time. They are urged on to maximum endeavor. Also special classes serve the pupil who enters high school with deficiencies in his early training, particularly in the essentials of reading and arithmetic. In addition, special classes help pupils of all levels of ability to maintain regular classification in spite of absences due to illness, staying out to work, late entry, or even truancy. Special classes often known as "pre-junior" classes provide for the adolescent subnormals who are too old to remain in the elementary grades and for the most part too incapable to profit by the regular offerings of the junior high school.

Pupils assigned to such classes are permitted later to enter the regular junior high school classes if they show evidence of capacity to master the materials of one of the regular curriculums. Another type of special class is created to care for behavior problems. The superficial fact about the pupils of all these special classes is that they are slow or failing.

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But the experienced teacher knows that when the real reasons for lack of progress are discovered they will not be the same for any two individuals, so bewilderingly different are the patterns formed by the interaction of the individual's heredity with the rest of his environment.

Schools reporting special classes to accelerate capable pupils sometimes are employing them as a means of correcting an undesirable amount of over-ageness in the system. Pupils of capacity above normal, but retarded, are coached with a view to bringing them up to normal grade-placement. More frequently these classes are established to accelerate pupils beyond the grade normal for their chronological age. This is usually accomplished by courses which permit the pupils to complete the work of grades 7 and 8 in one year. The latter purpose is often the chief reason for establishing opportunity classes for the gifted, though usually the aim is enrichment and not acceleration. Where enrichment is the objective the pupils are challenged to do creative work and to follow up tangential problems of intrinsic interest to them.

Outstanding characteristics of pupils assigned to special classes.—The purposes for which special classes have been established are reflected also in the outstanding characteristics of the pupils assigned to the classes, as enumerated by the respondents. Probably no one special class contains at any one time pupils with all of the characteristics mentioned. But the data show that the usual special class primarily for slow pupils at one time or another serves the needs of all of the following: Pupils with specific subject-matter difficulties, temporarily at least in need of more help than can be given in the ordinary class period; repeaters who must not fail again if they are to retain any self-confidence; pupils of low native ability often physically mature and chronologically over-age but mentally retarded; pupils uninterested in or without capacity for academic work; pupils of all abilities who do not know how to study; pupils who have not mastered the prerequisites of the course or courses being taken; pupils who are easily discouraged; pupils who are emotionally unstable; pupils who are careless, or unambitious, or nonchalant, or indifferent, or lazy, or flippant; pupils who are

socially maladjusted; pupils from poor homes, from broken homes, or from homes where the English language is not spoken; pupils of low vitality, with glandular disturbances, or other physical defects; pupils who have missed much of the regular work because of truancy, illness, late entrance, or staying out to work; and pupils who never intend to graduate, who place no great value on the advantages of further education of the kind being offered them, and who are often right so far as their own individual cases are concerned.

The characteristics of the foregoing types of pupils contrast strikingly with the following reported characteristics of pupils assigned to special classes for the very capable or gifted. These latter pupils are: Independent workers accustomed to taking the initiative; ambitious, reliable, industrious, and regular in attendance; usually from good homes, polite and well-mannered; young for their grade; physically well-developed and healthy; alert, enthusiastic leaders in school activities; rapid readers; more interested in academic than in nonacademic subjects; highly intelligent; of marked special talents; and with creative ability.

5. THE ASSIGNMENT OF PUPILS TO SPECIAL CLASSES

Factors considered in assigning pupils to special classes.— A wide variety of data is considered before either slow or gifted pupils are assigned to special classes. (Table 47.) The data most frequently considered in assigning pupils to special classes for the slow are "teacher's rating of the pupil's academic ability or intelligence" and "average scholarship marks in certain subjects." (Column 2, Table 47.) This fact reflects the primary reason for assigning pupils to special classes for the slow, namely, deficiency in one or more academic subjects.

On the other hand, a group of six factors is considered with marked frequency (Column 3, Table 47) in determining the assignment of pupils to special classes for the gifted. These six factors are: Industry, application, or effort; health; average scholarship marks in all subjects combined; intelligence quotient from a group test; physical maturity; and social maturity. The stressing of these six types of data

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seems reasonable, since one of two things will be expected of the gifted pupil. Either he will be accelerated or he will master an enriched curriculum with emphasis upon creative endeavor and the following out of lines of special interest. In either case the pupil must be highly intelligent and industrious. His health must be so sound that mental advancement may not be attained at the expense of physical well-being, and obviously if he has not maintained high scholarship in his regular classes the chances of success in gifted classes are remote. Finally, if he should be accelerated as a result of work accomplished in gifted classes he must be in no danger of becoming a misfit because of physical or social immaturity in comparison with his associates.

Table 47.—Percentages of schools reporting various factors to be considered in assigning pupils to special classes

Factor	The very slow	The gifted	Total
1	2		4
1. Teacher's rating of pupil's academic ability or intelligence	53	55	5-
4. A VEHAMO SCHOMERCH DIRECTOR CONTAIN ON PLACE	52	28	49
3. Industry, application, or effort	42	62	44
5. Average scholarship marks in all subjects combined	35	62	40
O. IDIGUIRENCE QUOLIANT from group test	36 33	55	31
1. COUNT OF IMPORTAL AGE FROM SPOND MANTAL FORT	33	58	3
8. Physical maturity 9. Type of home environment	30	45	34
9. Type of home environment	34	81	32
11. Average of several teachers' ratings of pupil's academic ability	25	52	30
or intelligence	29	20	28
12. Educational- or achievement-test age or score	24	38	26
14. Score or mental age from individual mental test	15	10	18
15. Educational or achievement quotient	11	14	12
6. Attendance	6	14	8

Determining a pupil's eligibility for assignment to a special class.—No definite formular is employed in determining whether a pupil shall be assigned to a special class. Each case is handled individually in the light of the available data. If the assignment is to be relatively permanent, thorough case studies are made. If the assignment is to be temporary, as in the case of pupils needing help to overcome specific subject-matter difficulties, it is made by the classroom teacher on the basis of her knowledge of the pupil's handi-

caps. Usually the assignment must be approved by the principal if it is made by a teacher other than the one who is to give the help.

Intervals at which pupils are assigned to or removed from special classes.—Pupils are usually assigned to special classes for the slow whenever occasion demands, and remain in the special classes until the deficiencies which were interfering with successful work in the regular classes have been removed.

However, some special classes for the slow, of which the adjustment classes of Junior High School 91, New York, are illustrative, are created with the expectation that most pupils assigned to them will remain there permanently. Special courses adapted to the pupils' abilities and probable future needs are offered and only rarely do the pupils return to regular classes.

Assignments to special classes for the gifted are invariably intended to be permanent. Pupils are assigned at the opening of year, or semester, and are not removed unless they are ound incapable of keeping up with the class because of ill health, poor preparation in certain subjects, or other

error in the assignment.

Number of subjects in which help is given.—In more than half of the special classes for slow pupils, assignment is often made for help in but one subject. The proportion varies, however, from 37 per cent in schools reporting opportunity classes to 82 per cent in schools reporting adjustment classes. That is, schools reporting opportunity classes for slow pupils generally segregate the pupils in all subjects, or at least in all or several academic subjects, whereas schools reporting adjustment classes for slow pupils usually segregate the pupils for instruction in but one or two subjects at a time. should not be interpreted as constituting a clear-cut differentiation of the two terms since opportunity classes are frequently places for coaching pupils in but one or two subjects and adjustment classes often apply to special classes wherein the pupil is segregated for all his academic work. this instance, and in all other instances involving comparisons of any of the six kinds of special classes for the slow, it is absolutely impossible to make clear-cut differentiations concerning the practices carried forward under the several

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terms. A predominant practice under one term is likely to be prominent if not predominant under any other.

Pupils, unless seriously subnormal or behavior problems, are rarely segregated into special classes for all their school work.

Pupils rarely assigned to special classes in all subjects.—
Teachers and administrators desire to retain slow pupils in the regular classes as far as possible. Hence the typical slow pupil is assigned to special classes for aid in those subjects in which he is likely to fail. Almost invariably these are the academic subjects. The work of many special classes is focused on reading and arithmetic because mastery of these fundamentals is essential to success with the academic subjects.

In schools reporting special classes for the gifted, complete segregation in all subjects is not favored because a wholesome variation in the experiences of these pupils is desired. Consequently gifted pupils are never segregated for extracurriculum activities, and seldom for the non-academic subjects. Indeed, in typing, manual arts, and physical education, gifted pupils are often reported to do work in no way superior to the average.

Grades in which the plan is operative.—The facilities of special classes are available somewhat more often in the lower grades of the secondary school than in the upper grades, 90 per cent of grades 7, 8, and 9 being served by special classes as compared with 72 per cent of grades 10, 11, and 12. One reason often assigned for this situation is that facilities are inadequate to make the plan operative in the upper grades. Another reason frequently given is that special classes are less necessary in the upper grades since comparatively few pupils needing this special help reach the upper grades, having been retained in the lower grades, or having left school to go to work.

6. PERIODS AND CLASSROOMS FOR SPECIAL CLASSES

When special classes meet.—Special classes maintained for pupils who are in need of supplementary assistance, that they may regain their proper places in the regular classes, are likely to be scheduled at any hour of the school day,

or before or after school, or on Saturdays. Sometimes pupils are excused from electives or required to give up the work of the activities' or club period in order to be free to receive the extra help needed. Often the pupil's study periods are utilized. On the other hand special review classes, classes for pupils who have failed, classes for bright pupils, classes for behavior problems, and classes for slow pupils whose handicaps are regarded as permanent are scheduled within the limits of the regular school day.

Classroom facilities for special classes.—In the schools selected for intensive study the classrooms used for special classes are the same as or similar to those used for the regular classes. Classroom facilities therefore vary with the school.

7. THE CURRICULUM AND THE TEACHER

The curriculum in special classes.—The regular course of study is the basis of the work done in special classes either for the very slow or for the very bright. For pupils who are permanently handicapped by inferior native ability the various courses are greatly simplified. In most instances this modification is purely empirical. The short-unit assignment figures prominently as a means of presenting the course of study to slow pupils. In classes for the very capable or bright, emphasis is always upon tangential problems arising from the regular course of study permitting creative expression or the wide exploration of fields of intrinsic interest.

Essential qualifications of teachers of special classes.—Respondents were asked to state what they regarded as the three most essential qualifications of a teacher of special classes aside from sufficient experience and adequate general, professional, and special training. Schools maintaining special classes primarily for slow pupils were overwhelmingly in favor of the following three: Sympathy, patience, and skill in diagnosing pupils' difficulties. Other qualifications mentioned, in the order of their frequency, are: An understanding of adolescent nature, teaching skill, desire to serve, pleasing personality, tact, resourcefulness and originality, industry, perseverance, withmon sense, enthusiasm,



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ability to inspire confidence, belief that the work is worth while, cheerfulness, sense of humor, sound health, and ability to work with many different cases during one class period.

In addition to sufficient experience and adequate general, professional, and special training, schools maintaining special classes for the very capable or gifted reported the following as essential qualifications for teachers of special classes: High intelligence, versatility, superior knowledge of subject matter, initiative, capacity to inspire pupils to do their best, vitality, wide contact with the world of affairs and industry, open-mindedness, willingness to be corrected, interest in the pupil's all-round development, industry, originality, pleasing personality, perseverance, poise, tact, and enthusiasm.

Teaching procedures in special classes.—For pupils whose difficulties are of a temporary nature the chief modification is not in course of study but in teaching procedure. The pupil's weaknesses are diagnosed by tests and by careful observation of his work. Close attention is given to his study habits and efforts are made to improve them. Specific assignments and drills are planned to correct weaknesses. The unit assignment or lesson-sheet plan is extensively used and each pupil advances at his own speed. Frequent tests and frequent reviews are provided. Classes are small and teaching is individualized, often tutorial. For pupils whose difficulties are of a permanent nature much repetition, drill, and patient explanation are used. Visual aids—such as maps, "movies," slides, and charts—are reported unusually valuable with these pupils.

For bright pupils the method of individual instruction by means of the unit assignment is used. Drill and repetition are practically abandoned. Much time is given to reports, demonstrations, plays, pageants, group projects, and class discussion. Recordings on disk records are often made of various activities which lend themselves to such methods of preservation and motion pictures with school-owned equipment are often taken of plays and pageants. Creative writing is preserved in school newspapers, magazines, and other school publications, of which "Poetry and Hums" from Thomas Jefferson Junior High School, Cleveland, Ohio, is an outstanding example.

Closely allied to these classes for the gifted and apparently just as effective without involving formal, elaborate, and expensive segregation are the honors courses such as are being conducted in the University High School at Madison, Wis., and in the South Philadelphia High School for Girls. In such courses a small but significant percentage of the pupils, under wise direction but with great freedom, pursue by methods of independent investigation work of a creative nature.

8. SPECIAL CLASSES FROM FOUR POINTS OF VIEW

Reactions of pupils to special classes.—The data of the present study indicate that slow pupils, in general, appreciate the opportunities which assignment to special classes affords. They enjoy their work more, are less discouraged, do better work, attend school more regularly, and remain in school longer than before special classes were started. Schools, where special classes for slow pupils are functioning successfully, report that pupils are eager to enter these classes, frequently request an assignment, and that there is always a waiting list. Slow pupils, when freed from the incubus of their more able fellows, are reported to develop initiative and to think for themselves.

On the other hand, when special classes for the slow are formed great care must be exercised to prevent the pupils assigned from feeling stigmatized. All adolescents want to be regarded as "regular." Slow pupils also frequently resent being deprived of electives, of home-room activities, club activities, and of other extracurriculum activities in order to do extra work on academic subjects in which they are deficient. It is probably unfair and certainly unnecessary to penalize slow pupils in such a way. In many schools the special classes occupy periods at the beginning or close of the regular school day and are often supplemented by Saturday classes as in Gary, Ind.

Of course, pupils who wish to leave school and are only retained by legal compulsion are unfavorable to special classes under any and all circumstances and pupils whose irregularity is the result of voluntary indifference resent the added vigilance over them.

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When special classes are organized for bright pupils, giving them the obvious advantages of accelerated progress or of an enriched program, other pupils are likely to feel that partiality is being shown unless the plan is administered wisely.

Reactions of parents to special classes.—Parents of slow pupils tend to pay little attention to the children's program in school. However, the discerning ones are reported to approve special classes for the slow and to commend teachers and administrators for the interest shown in the children. They not only appreciate the opportunities afforded by special classes but often request that their children be assigned to them. However, if the idea gets abroad that the classes are designed for mental defectives many parents at once become sensitive. Under such circumstances those parents of good social standing often object strenuously to having their children enrolled in special classes. This situation seldom arises where the special classes are auxiliary to the regular classes and where segregation is neither permanent nor extended to all subject-matter fields. However, if special classes are scheduled so as to lengthen the child's school day some parents will always object because they are unwilling to release the child from tasks to be performed outside of school hours.

When their children are assigned to special classes for the very capable or gifted a few parents feel unduly flattered and may make themselves objectionable. Parents whose children are not assigned feel that special favors are being shown. Hence there is all the more reason why those directing the school's policies should avoid placing great emphasis upon what is being done with these and related provisions for individual differences without at the same time carefully educating the parents to see the justice and advisability of the procedure from the standpoint of the common welfare. A few parents object to their children being assigned to special classes for the very capable because they regard the pace set either by acceleration or enrichment as likely to place too

great a strain on the pupil's health.

Reactions of teachers to special classes.—The tabulated replies show that teachers usually prefer classes for the very

capable or gifted to all other classes. However, they oppose acceleration and favor enrichment.

In general, teachers favor special classes for slow pupils because the regular classes become easier to teach and because they find that slow pupils can be taught when so segregated that proper subject matter and teaching procedures can be used. In cases where the teachers do not coach their own deficient pupils they cooperate by recommending pupils for assignment to special classes, by giving information and test data, and by planning the necessary remedial work.

To be sure, a few teachers object to giving extra time to special classes for the slow. They feel that the time is wasted and that slow pupils are unable to profit by further education. In some cases they are undoubtedly right. Other teachers fear that pupils may use the plan as a "prop" and become entirely dependent. Of course, this fear need not

be realized if skillful teaching is done.

Reactions of administrators to special classes.—Administrators welcome the reduction in failure, retardation, and discipline problems which follows the installation of special classes. The resulting increase in the numbers of pupils regularly classified simplifies the work of scheduling and of program-making. Few of them feel that their system of special classes is extensive enough to reach all pupils likely to profit by special help. They see a danger that pupils may come to rely too much upon special help but believe that such a possibility is not an inherent outcome of a wisely conducted system of special classes.

9. SPECIAL CLASSES IN INDIVIDUAL SCHOOLS AND SYSTEMS

Classes for the very capable or gifted.—Several illustrations of special classes for the very capable or gifted have been given in Chapter VI, Part I, in connection with illustrations of homogeneous grouping in individual schools and systems. (See secs. 7, 16, 17, and 20, Chapter VI, Part I.) Reference will be made here to two additional school systems—one of which provides for acceleration, the other of which provides for enrichment.

The D. A. Harmon Junior High School of Hazleton, Pa., is one of several schools where efforts have been made to

check the results of acceleration by a study of the subsequent scholastic records of accelerated pupils. In this school a group of very capable pupils completes the work of both grades 7 and 8 in one year. The scholastic record of the accelerated group which entered grade 9 in September, 1924, shows that of all marks earned in academic subjects during the last four years of high school, 49 per cent were A's or B's, 43 per cent were C's, 12 per cent were D's, and but 1 per cent were E's. This record suggests that acceleration did not interfere with the pupil's ability to do the work of the ensuing years.

In Gary, Ind., an extensive system of Saturday classes is scheduled from 8.15 to 11.15 a. m. offering work in all subject-matter fields. The classes are open to all children and attendance is purely voluntary. Capable children in large numbers attend these classes to pursue of their own accord supplementary projects in the fields of greatest intrinsic interest to them. For such children the Saturday classes are in every sense enrichment classes. However, at the same time the classes offer to the failures, to those who have been absent, or to those who for any reason need to make up work an opportunity to restore themselves to regular classification. Some notion of the popularity of these classes may be gained from the fact that during the month of March, 1930, a total of 165,493 pupil-hours were spent in Saturday classes. This figure represents an increase of 64,426 pupil-hours over the corresponding figure for March, 1929. The service cost was but 3% cents per pupil-hour.

Special instruction in the fundamentals of English and arithmetic.—Many schools are segregating pupils for special help in the fundamentals of English and arithmetic with a view to improving the pupils' work in all academic subjects. Among these may be mentioned the Langley Junior High School of Washington, D. C., where such remedial classes are provided for both seventh and eighth grade pupils; East High School of Superior, Wis., where seventh-grade pupils below the grade-norm in reading as shown by standardized tests are segregated for supplementary drill; and the Central Junior High School of Los Angeles, where the work

of a special class for pupils with intelligence quotients above 90 is concentrated upon remedying disabilities in reading and arithmetic. Harding Junior High School of Lakewood, Ohio, maintains two special classes in mathematics and three special classes in reading, each meeting twice a week during the activities' period. Pupils of grades 7, 8, and 9 are served by these classes. Pupils are assigned to the classes on the basis of scores made on standardized tests.

In Gillespie Junior High School, Philadelphia, special classes are maintained for remedial work in reading. The work done in these classes has restored to normal classification about half of the pupils who have been assigned to them because of failing marks in one or another of the academic

subjects.

Garfield High School of Los Angeles carries in the daily schedule corrective classes in English and mathematics. Pupils are assigned to these classes from their regular study periods on the basis of scores made on standardized tests or on the basis of classroom performance. The length of time which a pupil spends in the classes ranges from one day to an entire semester, depending wholly upon the pupil's need and the quickness with which he responds to special help. As is too often the case, the available facilities do not permit the assignment of all pupils who could profit by the correc-During the second semester of 1930-31, of 98 tive work. pupils reported as probable failures in mathematics, only 57 could be placed in corrective classes. Eleven per cent of those placed in the corrective classes failed as compared with 20 per cent of those who could not be provided for in the special classes. Moreover, 24 per cent of the pupils who were placed in corrective classes earned marks of B or C as compared with 14 per cent of such marks earned by pupils not in corrective classes.

Special curriculums for slow-learning groups.—Both junior and senior high schools are providing special courses and curriculums for pupils who lack the capacity to profit by any of the regular curriculums. The Cass Technical High School of Detroit has established an occupational curriculum for slow groups extending through grades 10, 11, and 12. In Lancaster, N. Y., a group of low-ability pupils is segregated

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throughout the last four years of high school. With the parents' consent these pupils receive a "finishing course" which prepares them for immediate entrance into a vocation rather than into higher institutions of learning. Springfield, Mass., provides special curriculums in central schools for boys and girls of low ability whose chronological ages range from 14 to 16 years. Occupational activities are emphasized and academic work is closely associated with handwork. Before assigning a pupil to these classes the following steps are taken: (1) The pupil is reported to the visiting teacher by the teacher and the principal; (2) the visiting teacher calls at the home and secures the parents' permission to give the child a psychological examination; (3) the clinical psychologist administers psychological tests, diagnoses the case, and makes recommendations; and (4) the research department administers tests of school achievement. Children assigned to the special classes are given educational tests from time to time to determine progress being made and to furnish a basis for recommendations as to changes in placement. Roosevelt Junior High School of Fond du Lac, Wis., assigns subnormal over-age pupils to a special room. These pupils take from 1 to 5 periods per week with the regular classes in such fields as manual arts, music, drawing, physical education, and auditorium work. In the Amos Hiatt Junior High School of Des Moines, Iowa, a group of 80 "pre-juniors" has been segregated. The ages of these pupils range from 12 to 16 years. Two specially trained teachers present all academic subjects to the pupils. The nonacademic work is presented by the regular nonacademic teachers. Occasionally pupils from the "pre-junior" group are restored to regular classification and advance successfully through the regular classes of grades 7, 8, and 9. Roosevelt Junior High School of Salt Lake City, Junior High School 91, New York, and the R. L. Stevenson Junior High School of Los Angeles are maintaining similar groups. In South Philadelphia High School for Girls extension classes are maintained for those girls who, in the judgment of their teachers and of the school's clinical psychologist, could not possibly complete a regular high-school course. These pupils are given a specially designed curriculum preparing them for

employment in various phases of home and clerical service. In Collinwood High School, Cleveland, Ohio, a similar service is rendered to both boys and girls. In each school the special classes for low-ability pupils, usually with intelligence quotients of less than 70, are organized into a regular department of the school, and exceptionally well-modified courses in academic and nonacademic fields are offered.

Special classes for habitual-behavior problems.—Many schools of considerable size find it advisable to segregate into classes for special instruction those pupils who constitute serious behavior problems. Almost always these classes are further segregated on the basis of sex. A large proportion of the pupils have court records and are in danger of becoming confirmed in vice or crime. Such classes are usually placed in the hands of capable teachers known to exert a strong moral influence over adolescents. Among schools maintaining such classes may be mentioned the Wilbur Wright Junior High School of Dayton, Ohio, the Batavia Junior-Senior High School of Cicero, Ill.

Special-help periods for coaching and individual instruction. - In the Seward Park High School, New York, a purely voluntary system is reported whereby pupils in need of extra help are coached before school hours, after school hours, and whenever opportunity is found. The responsibility is placed upon the teachers. However, in many schools definite periods are set aside for the coaching and individual instruction which many pupils need if failure is to be avoided. For instance, the East Hartford High School, East Hartford, Conn., sets aside a half hour at the end of the school day, from 2.45 to 3.15, for such work. Thirty-one teachers of a faculty of thirty-nine meet pupils regularly at this time. Hammond High School, Hammond, Ind., sets aside a similar period from 3.10 to 3.55. Forty-four teachers of a faculty of sixty-one are scheduled to give special help at this period. North High School of Dallas, Tex., also maintains ninth-period (last-period) coaching classes conducted by practice teachers from a local school of education. Martinsburg, Pa., sets aside a special-help period from 2.22 to 4 p. m. Each teacher is held responsible for her own pupils. At the middle of each

marking period all pupils in danger of receiving failing marks are required to report to the special-help classes until the deficiency is removed. In the Douglass and Weiser Junior High School, Reading, Pa., the special coaching period is scheduled from 11.20 to 11.55 a. m.

In the Turners Falls High School, Turners Falls, Mass., the school day is a single session lasting from 8 a. m. to 1 p. m. A special session is held daily from 2.30 to 4 p. m. for two types of pupils, namely, those who have the necessary ability but have not tried, and those who need special help. The former are detained for supervised study. The latter are assigned to the teachers judged to be best qualified to furnish the help needed. For September and October of 1930-31 the records show 339 cases of detention and 913 cases of

special help. The school enrolls about 400 pupils.

In the Monroe Junior-Senior High School, Rochester, N. Y., the special coaching period at the close of the regular school session is considered superior to other methods which have been employed largely because the pupil is helped by his regular class teacher who should be more familiar with his needs than anyone else is likely to be. Other methods tried in this school and found undesirable were: (1) Pupils needing coaching were segregated from the regular classes for the entire day; (2) pupils were removed from the special or elective subjects such as music, shop, drawing, and health education and placed in special-help classes; and (3) certain teachers from each department were assigned to teach pupils at the close of the regular school day. In this instance the teachers found it difficult to discover the needs of most of the pupils assigned to them.

In Woodlawn High School, Birmingham, Ala., pupils needing help in mathematics are coached by the members of the "Euclidean Honor Society," a group of fifth-semester pupils with excellent records in mathematics. The project was begun in 1926. Failures in mathematics have been

materially reduced.

Special classes for pupils who have failed or are in danger of failure.—In the Montclair Senior High School, Montclair, N. J., a special class is organized at the end of the first 12 weeks for pupils in danger of failing in tenth-grade Latin.



The parent is notified of the pupil's transfer to the class. He is informed that the pupil's chances of success during the present year are greatly increased but that the pupil will find it necessary to discontinue Latin at the end of the current year.

Table 48.—Relation of special classes in English to the promotion of pupils, James Monroe High School, New York City*

Pupil's present	New cl	assification m mark is-	when	Pupil's present				
classifica- tion	Failing	65 to 74	75 or more	classifica- tion	Failing	65 to 74	75 or more	
1	2		4	1	2	1	4	
9B 9B-S ¹ 9A-S ¹ 10B 10B-S ¹ 10A 10A-S ¹	9B-81 9B-83 9A-81 9A-83 10B-81 10B-83 10A-81	9A 9A-81 10B 10B-81 10A 10A-81 11B 11B-81	9A 10B 10B 10A 10A 11B 11B	11B 11B-S ¹ 11A 11A-S ¹ 12B 12B-S ¹ 12A-S ¹	11B-8 ¹ 11B-8 ¹ 11A-8 ¹ 11A-8 ¹ 12B-8 ¹ 12B-8 ¹ 12A-8 ¹	11A 11A-S ¹ 12B 12B-S ¹ 12A	11A 12B 12B 12A 12A	

Table adapted from Smerling, Frank A., op. cit., p. 21.

The English department of the James Monroe High School, New York, forms special classes at the end of the first semester for pupils who have failed. These special classes are designated in Table 48 by the symbol S1. If the pupil fails again at the end of the second semester he is reassigned to a section containing pupils with a similar record. sections are designated in Table 48 by the symbol S2. system works out as follows: If a pupil, who is classified at the beginning of the first semester as a 9B (Column 1) receives a mark of 65 or over in his English, he is promoted to a regular 9A section (Columns 3 and 4, Table 48). If he receives a failing mark he is promoted to a special 9B section. Column 2, Table 48.) But if he had been classified as a 9B-S1 (Column 1) at the beginning of the semester, three things could happen: (1) If he received a mark of 75 or more (Column 4) he would be promoted directly into the 10B grade and hence would have removed his deficiency in English; (2) if he received a mark of 65 to 74 he would be promoted to a 9A-S1 section (Column 3) from which he

might advance directly to a regular 10A section (Column 4) in one more semester, provided he earned a mark of 75 or more; (3) if he received a failing mark (Column 2) he would be classified as a 9B-S² for the following semester. The chances are negligible of regaining normal classification after assignment to a 9B-S² group. Of the 6,543 pupils in the English classes of the James Monroe High School on January 31, 1928, 775 failed. These 775 pupils were assigned to 20 S¹ classes. At the end of the term about a fourth of these pupils were restored to normal grade status; a half were promoted to the next higher S¹ class; and 165 had failed completely. These complete failures were organized into S² classes for the following fall.

Evidence reported from the William S. Hackett Junior High School, Albany, N. Y., indicates that special classes for pupils in danger of failing have a high value, as measured by regents' examinations. (Table 49.)

TABLE 49.—Record on regents' examinations of pupils coached in special classes, William S. Hackett Junior High School, Albany, N. Y.

Subject	Number of pupils	· / 17-	Number of pupils failing	Number of pupils absent
· 1	2	-3	4	
Algebra. Arithmetic. General science. Social science. Latin. French or German. English VIII. English IX.	96 59 29 28 57 40 17	45 40 21 17 34 19 15	45 16 7 7 20 17 1	3 3 1 4 3 4

In the opinions of the teachers all pupils included in Table 49 were failing at the time of assignment to the special classes.

In the Jordan High School of Lewiston, Me., 20 pupils per day, on an average, have been coached by one teacher in English, French, Latin, mathematics, and history. Although these pupils were all estimated to be failing at the time of assignment to the special classes, the extra help re-



¹ Smerling, Frank A., Promotion and Retardation of Pupils in English at the James Monroe High School, Bulletin of High Points, 10: 19-22, September, 1928.

ceived enabled from three-fourths to nine-tenths of the pupils to pass at the end of the semester. Similar records in the reduction of failures are reported from other schools. The James Monroe High School, New York, reports that 75 per cent of pupils doing failing work in mathematics are brought up to the standards of the regular grades by means of special classes. Monaca High School of Monaca, Pa., reports that 60 per cent of the pupils assigned to special classes for those doing failing work are brought up to standard in the various academic subjects.

Clifton Park Junior High School, Baltimore, Md., is putting forth a thoroughly organized effort to supply pupils in danger of failing in certain academic and nonacademic subjects with the special help needed. The entire faculty cooperates in giving this help during a special period set aside at the end of the regular school day. At the time the report was made special help was being provided in English, mathematics, history, and civics for grades 7, 8, and 9; in geography for grade 7; in science, for grade 8; in Latin, bookkeeping, typewriting, and business training for grades 8 and 9; and in French for grade 9. However, in all special classes emphasis is being placed upon fundamentals of English, or mathematics, or both. Parents are informed when the pupil is assigned for special help and are notified when the pupil is absent from the special classes to which he has been assigned. The percentage of failures for the entire school during the second semester of the school year 1929-30 was 7.8 as compared with 11.3 for the two preceding years during which the plan was not in force.

In the Eastside High School, Paterson, N. J., four procedures are in use to prevent failures or to care for pupils who have failed: (1) Special classes are organized during the 6-week summer session expressly for pupils who have failed. Pupils may review either one or two subjects, the number being determined by the circumstances of the individual case. During the summer session of 1930, 88 per cent of the pupils enrolled in the special classes secured their credits. (2) The English department after the first few weeks of each semester organizes special classes for pupils in danger of failing. These classes meet daily after school and do work supple-

mentary to the work of the regular classes which the pupils continue to attend. (3) The mathematics department, in addition to the regular classes, organizes slow-progress classes which cover about three-fifths of the materials of the regular course and for which three-fifths the regular credit is allowed. Pupils whose abilities are known to be such as to adapt them to the work of slow-progress classes are assigned to these classes at the beginning of the semester. Other pupils are assigned at the end of the first six weeks if judged likely to fail in the regular classes. Certain predetermined points of coincidence between the regular classes and the slow-moving classes make transfers from one course to another possible at regular intervals. The success of the plan may be illustrated by data from the classes in plane geometry,2 based upon the average of seven terms of work in plane geometry before slow-progress classes were established, and the average of three terms' work in plane geometry after slow-progress classes were established. The data show that while 13 per cent fewer pupils are earning the maximum of five credits under the new plan, yet 17 per cent who failed under the old plan are now earning three credits. Outright failure in plane geometry has been reduced from 22.5 to 5.5 per cent. (4) Each department of the school also operates an afterschool study group in addition to the customary detention given by subject teachers for the purpose of helping deficient pupils.

In the Arsenal Technical High School, Indianapolis, the special classes are organized into a reclassification department. The department offers special help on a lesson-sheet or individualized instruction basis in English, mathematics, social science, science, commercial subjects, and industrial arts. The department aids the slow, the truant, the late entries, and those who have been ill. The primary object of the department is to supply such special coaching as may be needed to enable the pupils to return to their normal schedule. Transfers may be made at any time from special classes to regular classes or from regular classes to special



^{&#}x27;Adapted from data supplied by A. W. Collard, head of the mathematics department, Rastuide High School, Paterson, N.J.

classes. However, most transfers are made at the end of each marking period. The enrollment of the department during the first marking period consists of pupils who failed during the preceding semester. To compensate for the extra teacher-time given to this work, regular classes are made larger.

10. SUMMARY

Special classes begin where homogeneous grouping leaves off; that is, they are formed for those pupils who deviate most extremely from the norm in capacities, or in needs, or in both. Special classes primarily for slow-learning pupils are provided about nine times as often as for the very capable or gifted.

Special classes are widely used in the schools of every State; and use increases regularly with increase in total enrollment. The reorganized schools, especially schools including grades 7 to 9, greatly surpass the unreorganized schools in the extent to which special classes are provided.

Stated in general terms the replies show that special classes primarily for the very slow have been created because, when all other provisions for individual differences are functioning efficiently, a certain small percentage of the pupils are unable to succeed with the regular school work without additional The pupil's lack of success may be due to insufficient ability, to absence from regular classes, to unwillingness to work, or to any one of a number of adverse circumstances which may have imposed upon him a handicap which makes it impossible for him to achieve success in the regular classes. On the other hand, special classes for the very capable or gifted are established either to bring retarded but capable pupils up to normal grade-placement, to accelerate capable pupils, or to enrich the program of capable pupils. In the very nature of the purposes for which the two types of special classes are created it follows that a heterogeneous array of pupils find their way into the special classes for the slow-learning and a fairly homogeneous group into classes for the very capable or gifted.

A wide variety of data is considered before either slow or gifted pupils are assigned to special classes. The most frequently considered bases for assigning slow pupils are teacher's rating of the pupil's academic ability or intelligence and average scholarship marks in certain subjects. Six types of data are stressed in assigning pupils to special classes for the very capable or gifted, namely: (1) Industry, application, or effort; (2) health; (3) average scholarship marks in all subjects combined; (4) intelligence quotient from a group test; (5) physical maturity; and (6) social maturity. No definite formula is employed in determining whether a pupil shall be assigned to a special class. Each case is handled individually in the light of available data. If the assignment is to be relatively permanent thorough case studies are made.

Pupils are usually assigned to, or removed from, special classes for the slow or failing as occasion demands. However, special classes for the very subnormal and for the very capable or gifted are created with the expectation that most pupils assigned to them will remain there permanently. Slow pupils are usually assigned to special classes for help in one or more academic subjects. The gifted are usually segregated in all academic subjects.

Special classes are available somewhat more often in the lower grades than in the upper grades of the secondary school.

Classes for the very slow may be scheduled at any hour of the school day, or before or after school, or on Saturdays. Classes for the gifted, for behavior problems, and for slow pupils whose handicaps are regarded as permanent are scheduled within the limits of the regular school day. No special classroom facilities are provided for special classes.

The regular curriculum is the basis for work, done in special classes. Most modifications are purely empirical. Modifications of teaching procedure are much more frequent than modifications of subject matter. The unit assignment is extensively used, both in classes for the slow and in classes for the gifted.

Aside from sufficient experience and adequate general, professional, and special training, the three most essential qualifications of teachers of very slow groups are (1) sympathy, (2) patience, and (3) skill in diagnosing pupils' diffi-

culties. The three most frequently mentioned qualifications of teachers of the very capable or gifted are (1) high intelligence, (2) versatility, and (3) superior knowledge of subject matter.

Pupils, parents, teachers, and administrators are reported to react favorably to special classes. However, the reactions are not all favorable and point to dangers to be avoided.

The evidence suggests that "honors courses" may be a very acceptable alternative to segregated enrichment classes for the gifted.

PART II. PLANS CHARACTERIZED BY THE UNIT ASSIGNMENT

CHAPTER I: A PERPLEXING NOMENCLATURE

1. PREVIEW OF PART II

Procedures studied.—Part II of this monograph is planned to show just what practices of secondary schools are included under the following widely used terms: Morrison plan, Dalton plan, Winnetka technique, differentiated assignments, long-unit assignments, individualized instruction, contract plan, laboratory plan, problem method, project method, and any combination of two or more of the last seven terms.

These methods or procedures are grouped together because each is characterized prominently by some form of the unit assignment. The ensuing chapters of Part II report the findings of an intensive study of 457 schools representing all States of the Union. This number includes 52 schools using the Morrison plan; 32, the Dalton plan; 11, the Winnetka technique; 1, differentiated assignments; 40, long-unit assignments; 24, individualized instruction; 58, the contract plan; 26, the laboratory plan; 62, the problem method; 54, the project method; and 97, some combination of two or more of the last seven terms.

Four comparative studies.—Separate studies of the Morrison plan, the Dalton plan, and the Winnetka technique were made and the findings have been recorded in Chapters II, III, and IV of this part. In each study, the actual practices of a highly selected group of schools were compared, point-for-point, with certain fundamental features of the plan or technique as set forth by its originator. With the remaining seven procedures a different method was used. Since each of these procedures springs from diverse sources no authoritative external criteria, with which to compare practices, were available. Therefore, a systematic intercomparison was made of the practices of selected secondary schools clas-

sified according to their preferences for one or more of the seven terms. This intercomparison is reported in Chapter V, Part II.

Analysis of unit assignments.—Most of the schools included in the preceding four studies submitted samples of what they regarded as their best unit assignments. All such unit assignments were carefully examined and a number were selected for detailed analysis. The results of this analysis, along with some of the most interesting unit assignments in each subject-matter field are presented in Chapter VI, Part II.

1. A SAMPLING OF THE LITERATURE

A study of five 3-year periods.—As a background for the ensuing chapters a cross section of the literature of the past 15 years, dealing with the origin and development of the 10 plans or procedures listed in section 1, was examined. The Reader's Guide was consulted for each of five 3-year periods since 1915. The following key words were used: Assignment, contract, Dalton, education, individual, individualized, laboratory, long-unit, Morrison, plan, problem, project, unit, and Winnetka. A total of 213 articles was discovered and classified as shown in Table 1. These articles will be discussed first, with special reference to their titles and the dates of their appearance; second, with reference to their bearings upon a terminology which to-day has become very confusing.

TABLE 1.—Two hundred thirteen articles, listed in the Reader's Guide during five consecutive 3-year periods, classified under nine headings

Heading	Periods					
	1916-1918	1919-1921	1922-1924	1925-1927	1928-1930	Total
1	3	. 3	4			1
Contract plan. Dalton plan. Individual education ! Laboratory plan.		1	8	23 26	8 6 10	35
Morrison plan. Problem method. Project teaching. Unit assignment	13	38	3 85	22	1 15	12
Winnetka plan		3	i	0	1	- 2
Total	13	41	48	78	88	212

Individual and individualized instruction.

¹ Or Winnetka technique.

INDIVIDUAL DIFFERENCES, MARKING, AND PROMOTION

The period 1916-1918.—Thirteen articles were discovered by use of the various key words for the period 1916-1918. All appeared under the heading "project teaching." The significance of the blank spaces in Column 2 of Table 1 requires no emphasis. They show that the various procedures other than project teaching were either unknown during 1916-1918 or were playing minor rôles. In the titles of these 13 articles the home is referred to four times; agriculture, three times; home economics, twice; manual training, industrial arts, science, elementary education, and teachertraining, each once. Thus the titles suggest an early emphasis upon the project in the fields of agriculture and home economics. Bode has discussed this point, 1 tracing the origin of the project to agriculture and defining the project method as "the method of incidental learning." In these 13 titles such expressions occur as "problem and project," and "project-problem," but the word problem does not appear alone in any title. One article discusses the project as a form of "teaching unit."

The period 1919-1921.—Forty-one articles appear for this period, 38 under the heading "project teaching." In three titles the hyphenated word "problem-project" occurs and two titles use only the word "problem." Four articles discuss the nature of a problem or project. One discusses discipline under the project method. The titles of the articles refer to agriculture eight times; to the home, manual training, and industrial arts, each seven times; to teacher-training, three times; to science, twice; to elementary education, drawing, salesmanship, civics, and history, each once. These frequencies show a predominating tendency during this period to use the term in connection with agriculture, with the home, and with manual training or industrial arts. But the term was quite obviously being extended into the academic fields during the period.

During this period the first article on the Dalton plan is listed and two articles appear on the Winnetka plan or technique. With the Dalton plan, new terms related to the project appear, namely, the "job," the "contract," and the

¹ Bods, Boyd H. Modern Educational Theories, New York, Macmillan Co., 1927, Chapter VII.

"unit," and with the Winnetka technique the "goal" appears as a teaching or learning unit.

The period 1922-1924. - Forty-eight articles are listed for this period. The number of articles occurring under "project teaching" decreases slightly. The index classification of these articles in the Reader's Guide shows increasing evidence of becoming inadequate. A new heading "problem method" was created under mich three articles are listed, and the reader is referred from these to "project teaching." Under "project teaching" one article on the "problem method" is indexed, another deals with "projects and problems," and a third deals with the "project-problem." These frequencies reflect the well-known uncertainty, which has prevailed and which to-day prevails, as to what problems and projects really are and whether or not they are synonymous. The titles of the articles on project teaching refer to manual training or industrial arts, five times; the home, elementary education, and geography, each four times; agriculture and art, each twice; science, civics, English, printing, social studies, æsthetic appreciation, and missionary education, each once. These frequencies show that the word project during 1922-1924 has been applied to fields farther and farther removed from the fields of its origin:

During this period the number of articles on the Dalton plan sharply increases and two new headings are suggested, namely, the problem method and the unit assignment.

The period 1925-1927.—During the years 1925-1927 the maximum number of articles is listed. However, the number appearing under project teaching continues to decrease, the frequency of articles under this heading being reduced to 22. The articles listed under project teaching continue to show a wide application of the term "project" to various subject-matter fields, as noted for the preceding 3-year period, and new applications of the term refer to the cafeteria, to the movie, and to speech education.

During this period a flood of articles bursts forth on the Dalton plan and on individual or individualized instruction.

The period 1928-1930.—During 1928-1936 the number of articles on project teaching continues its progressive decrease. A sharp falling off occurs for both the Dalton plan and for

individual or individualized instruction. Terms such as "contract," "laboratory," and "unit," which had been developed in connection with other plans or methods, now give their names to new plans or methods, as for example, the contract plan, the laboratory plan, and the unit assignment. Frequencies are listed opposite eight different headings for 1928–1930 (Column 6, Table 1) as contrasted with a frequency for only one heading in 1916–1918 (Column 2).

Summary.—The preceding data show, as well as a sampling of the data may be expected to show, the interesting expansion during the past 15 years of the term "project" as applied to an increasing variety of teaching and learning units. This expansion has been accompanied by a gradual disintegration in the meaning of the term. Simultaneously, many new terms have been created to apply to teaching or learning This evolving terminology units of one kind or another. has been accompanied by the appearance of certain plans. methods, or techniques, which have been listed at the outset of this chapter as objects for comparative study. Each of these plans, methods, or techniques is characterized by an endeavor to develop more effective teaching or learning units and to use these units more efficiently in the educative process.

The project as seen by Snedden in 1916.—A few representative articles will be explored more minutely. In one of these articles 2 Snedden discusses the project as a teaching unit. According to Snedden's view all subject matter must be divided into teaching units to secure efficiency "of organization, of accessibility, or of mastery." He reports that in the early development of agricultural, industrial, and vocational education, many educators favored the project as the chief form of teaching unit in those fields. He lists the primary characteristics of the project as conceived by those early educators as follows:

1. The undertaking always possessed a certain unity.

2. The learner himself clearly conceived the practical end or outcome to be attained, and it was always expected that this outcome was full of interest to him, luring him on, as a definite goal to be won.

1 Ibid., p. 421.

¹ Snedden, David. The Project as a Teaching Unit. School and Society, 4: 419-423. September 16, 1916.

3. The standards of achievement were clearly objective, so much so that the learner and his fellows could, in large part, render valuable decisions as to the worth (in an amateur or commercial sense) of the product.

4. The undertaking was of such a nature that the learner, in achieving his desired ends, would necessarily have to apply much of his previous knowledge and experience, perhaps heretofore not consciously held as usable in this way (e. g., art, science, mathematics, special tool skill) and probably would have to acquire also some new knowledges and skills.

Snedden came to the early conclusion that the project could not comprehend all teaching units. Moreover, as a member of a committee to develop a course in household arts he found that all the desired teaching units even within this limited field could not be designated as projects. When the course in household arts was complete, it was composed of the following units: (1) Execution projects (school); (2) execution projects (home and school); (3) observation and report projects; (4) topics, involving chiefly book study, lecture, or explanation by the teacher.

The project as seen by Horn in 1920.—In the summer of 1919 Horn asked the following questions of 120 advanced students in the University of Chicago:

1. Give an example of what seems to you to be a project.

2. Is it essential to a project that the students should use or handle concrete materials—defined as making a dress, baking a cake, building a bridge, or raising a call?

3. Is it essential that projects should be taken in their life setting?

4. Is an activity a project if the student merely thinks?

5. Would you call listening to a Victrola a project?

When the replies were analyzed Horn found that nearly two-thirds of the examples of projects were taken from manual training, home economics, and agriculture. Most of the respondents believed projects should be taken in their life setting and that a typical project involved the use of concrete materials in a constructive way. No projects involving only asthetic experiences were mentioned. An activity involving only thinking was not regarded as a project. Horn concludes from his study that if a unifying term is needed to include all teaching and learning activities, "project"

⁴ Horn, Ermest. What is a Project? Elementary School Journal, 21:112-116, October, 1920

is not the term. So to use it would involve: "First, forgetting the use to which it is now put by most people; second, learning a new use for it; and third, seeking a new term to apply to those activities which it now describes acceptably." ⁵

Ruch's conclusions.—Ruch, writing in the same year as Horn, referred to "the problem or project method of instruction" as if the characteristics of the one are the characteristics of the other.6 He compared three formulations of the characteristics of a project, namely, Snedden's, Moore's, and Randall's. In these three formulations Ruch saw two points of agreement. First, the project arises out of a felt need for a solution, which results in the organization of knowledges, experiences, and skills in an endeavor to attain the foreseen end. Second, the project involves the production and evaluation of an objective product by the pupil. Ruch accepted the first point of agreement, but questioned the validity of the second point. Then, quite overlooking or ignoring the positions assumed both by Snedden and Horn, he asked: "If the objectivity of result is an unvarying accompaniment of project teaching, will that not set a definite range of applicability to the use of the project?" Most other writers have desired precisely that outcome, namely, the restricting of the term "project" to the field where it originated and where they believe it to apply most appropriately.

However, at that time it was Ruch's opinion that the word "project" might be extended to nearly all subject-matter fields. He would make "project" synonymous with "problem," its attributes being "practically identical with the analysis which John Dewey has made of the complete act of thought." 10

A study of definitions of the project.—One writer 11 in 1920 says she had become so confused concerning the meaning of

¹ Tbid., p. 116.

[•] Ruch, G. M. Contributions to the Psychology of the Project. School and Society, 11: 386–388, March 27, 1920.

¹ Op. dt.

Moore, J. C. Project Science, Progressive. School Science and Mathematics, 16: 686-690.
 Randall, J. A. Project Teaching. Proceedings. National Education Association, 1915.

^{*} Randall, J. A. Project Teaching. Proceedings, National Education Association, 1915, pp. 1009-1012.

[&]quot;Ruch, G. M. op. cit, p. 388.

¹¹ Davis, Elizabeth. Inquiry into the Nature of the Project-Problem. School and Society, 12:346-348, Oct. 16, 1930.

the term "project" through hearing it used in so many different ways that she decided to "look up" everything she could find by way of definition of it. She discovered the following definitions: A project is (1) a problem; (2) a complex problem; (3) an aggregation of small problems; (4) a purposeful act; (5) a whole-hearted, purposeful act; (6) a large topic; (7) a plan in the teacher's mind; (8) a project-question, project-exercise, or a project-complex, when viewed by the pupil; (9) a question-project, an exercise-project, or a complex-project, when viewed by the teacher.¹² These definitions do not tend to clarify one's thinking concerning projects, problems, and exercises.

Charters' views in 1921.—Charters, in 1921, showed the inconsistencies which had arisen as a result of an incomplete definition of the term "project." The vague definition of a project as "a whole-hearted, purposeful act" had resulted in confused thinking as indicated both by the literature and by school courses of study. Charters stated that, "anything, whether it be a drill, topic, question, problem, or exercise is called a project if the teacher thinks the pupils are pursuing it with a dominant purpose."

8. UNRESTRICTED REDEFINITION OF TERMS AND THE USE OF GENERAL TERMS

Unrestricted redefinitions of terms.—To-day educators are more bewildered than when Charters wrote the above. New terms have been created and so defined and redefined, that confusion has been piled upon confusion. Space may be taken to illustrate briefly how this has happened. For instance, in 1929, two investigators set out to evaluate the "contract" method. So far as the present writer knows the word "contract," as used in education, originated with the Dalton plan. Yet the investigators found it necessary to state that they were not using the term "contract" as it is used in the Dalton plan, but as it is advocated by Morrison

[#] Ibid., p. 347.

n Charters, W. W. The Limitations of the Project. Addresses and Proceedings, National Education Association, 1921. pp. 428–430.

¹⁴ Esson, V. E., and Cole, R. D. Effectiveness of the Contract Method as Compared with the Ordinary Method of Teaching. School Review, 37: 272-281, April, 1929.

(who incidentally uses the term "unit") and by Miller. Not only did they employ the term "contract" as redefined by certain intermediary writers, but they themselves redefined another term from the Dalton plan, namely, the "job," using the latter term to mean one-third of a semester's work in one subject, although, as used in the Dalton plan, it means a month's work in all subjects.

Multiply this instance literally by thousands in the course of a few years and one needs not marvel that education suffers from a confusion of tongues. However much one may deplore the situation, it seems futile to protest. Apparently education is laboriously evolving from the stage, through which all sciences must pass, wherein the stone varies from one meadow to another and the foot lengthens or shortens

as new heads wear the crown.

A fondness for general terms.—Another source of confusion in educational parlance is a certain fondness which both educators and educationists have entertained for the word "plan," or for related words used generically, such as "technique," "method," or "system." If the originator of an innovation in education does not call it a "plan," then some one else is likely to do it for him. It is much easier to be general than to be specific. For example, a term frequently used in discussions of provisions for individual differences is the "Morrison plan." In a comprehensive volume Professor Morrison has described the practice of teaching in the secondary school.15 Now the profession is attempting to summarize his contribution in two words, the "Morrison plan," and they are doing neither education nor Professor Morrison a favor. Henceforth, it is the Morrison plan to every neophyte whether he has seen the book or not. Needless to say, Morrison attempts no such general name for the organized set of principles which he advocates. While the word "plan" has the advantage of brevity, no word could very well include more or signify less. A plan once christened becomes a thing to conjure with. The name trips glibly from tongue to tongue. School after school "adopts"



¹⁵ Morrison, Henry C. The Practice of Teaching in the Secondary School, Chicago, Ill., University of Chicago Press, 1931, 688 pp.

it, always with adaptations to local conditions. Give it time and it comes to mean "all things to all men." It describes everything in education in general and nothing in education in particular. The fact that the ideas underlying the new plan themselves change, grow, and develop, if they are not still-born, adds to the general confusion.

Suppose a new idea in education suggests a departure from the usual educational practice to the extent that two teachers, instead of one, are assigned to a large class, one teacher to hear recitations, the other to do individual work with lagging pupils. Why not let the new term suggest the actual fact. Better a clumsy expression such as the "two-teacher class" than a general expression such as the ---- plan. Similarly, the "five formal steps" is more definitive than the "Herbartian plan"; "monitorial instruction" is more specific than "Lancaster's system"; and "directed study" means more than the "Miller plan." Brevity is not the sole issue. Even brevity should be avoided when it generates a smokescreen obscuring the idea back of the term. The vocabulary of education would be greatly simplified if each new term clearly implied the nature of the new educational idea for which it stood. Under such circumstances far fewer terms would be created.

Indeed, an ethical issue seems to be involved in the indiscriminate use of generic terms to describe contributions which are essentially specific. The new plan is not likely to be such for the whole educational process. If not, the distinguishing differentiæ should be clearly indicated. In naming new educational ideas and practices, the precedent from the natural sciences suggests that specific contributions be given specific names. Mendel's law, the principle of Archimedes, and the volt, are specific terms. They are what they are and they do not suggest in any way that they include the whole body of that science whose members they But there is something comprehensive about a "plan." The term tends to appropriate to itself that entire basic body of educational principles and practices which are the heritage of the teaching profession, and tacitly localizes them as somebody's or some place's plan.

CHAPTER II: THE MORRISON PLAN

1. AN OVERVIEW OF SCHOOLS USING THE PLAN

A return to terms in current use.—However much any one individual may deprecate the generalities and obscurities of existing terminology, he must return for the time being to the terms in current use. This chapter is entitled "The Morrison Plan" not in approbation of the expression as definitive of the practices to which it is applied but because it is the name used currently by some schoolmen to indicate certain practices which they regard as provisions for individual differences. Similar observations hold also for the chapters dealing with "the Dalton plan" and "the Winnetka technique."

Geographical distribution of schools reporting the Morrison plan.—The preliminary inquiry addressed to all secondary schools on the mailing lists of the United States Office of Education showed that 737 schools, or nearly 9 per cent of the 8,594 schools whose replies were tabulated, reported the use of the Morrison plan. About a fourth of those schools reporting the use of the plan reported its use with estimated unusual success.1 The schools using the Morrison plan are distributed through 46 States of five geographical areas. (Table 2.) In California, Illinois, Maryland, Ohio, Pennsylvania, Washington, and Wisconsin, comparatively large numbers of schools are experimenting with the plan. Delaware and Maryland report a noticeably large percentage of use of the plan with estimated unusual success. However, for all States combined the percentage of use of the plan with estimated unusual success is only 2.

Size.—The percentages of use and of use with estimated unusual success increase regularly from the smallest to the largest enrollment groups. (Table 3, Columns 4 and 6.) However, the considerable number of small schools using the plan (Column 3) is sufficient evidence that size of the

¹ Table 4, The Scope: A Preliminary View p. 9.

school alone does not determine whether the plan shall or shall not be used.

Table 2.—Geographical location of schools reporting on the preliminary inquiry the use of the Morrison plan with and without estimated unusual success

Geographical area	Use		Use with estimated unusual success	
	Number	Per cent	Number	Per cent
1	3		4	
New England Middle Ätlantic South Middle West West	21 182 75 830 127	4 12 8 9 12	1 57 19 71 27	1

Table 3.—Schools reporting the use of the Morrison plan, or use of the plan with estimated unusual success

Enrollment group	Number of schools	Ū	80	Use with estimated unusual success	
	reporting	Number	Per cent	Number	Per cent
1/	2	3	4		
50 or fewer	1, 476 1, 904 2, 391 1, 128 561 304 740	51 109 195 127 71 51 133	4 6 8 11 13 17	11 31 43 34 17 9.	1 2 2 3 3 3 4
Total	8, 594	737	9	175	2

Type of organization.—Likewise the type of organization of the school apparently has little to do with either the use of the Morrison plan or its use with estimated unusual success. (Table 4.) In schools including grades 8 to 11 the plan is used somewhat more extensively than in schools including grades 9 to 12; and respondents from the former schools are more generally inclined to estimate unusual success with it. (Columns 4 and 6.) Similarly, in schools including grades 7 to 9 and in schools including grades 10 to 12 more use is made of the plan than in schools including grades 7 to 12.

TABLE 4.—Schools reporting the use of the Morrison plan, or use of the plan with estimated unusual success

Type of organization	Number of schools	Use		Use with estimated unusual success	
	reporting	Number	Per cent	Number	Per cent
1	3	3	4		4
9 to 12 7 to 12 8 to 11 7 to 9 10 to 12 6 to 11 All others.	4, 304 1, 284 638 614 308 105 1, 341	356 123 79 80 42 6 51	8 9 12 13 13 6	81 28 30 11 12 0	2 2 4 4 0
Total	8, 594	737	9	175	2

I. A COMPARATIVE STUDY

The criteria.—From the rather large group of schools reporting the use of the Morrison plan a small group was selected for intensive study. The purpose of this study was to compare the practices of a highly selected group of schools, operating under the term "Morrison plan," with certain distinctive features of practice set forth by Morrison in "The Practice of Teaching in the Secondary School." An effort was made to select those features which depart to a marked degree from traditional classroom practice and which, therefore, may be regarded as true criteria for a comparative study.

Steps involved.—The first step of this comparative study involves a brief statement of those features of "The Practice of Teaching in the Secondary School" which are to form the basis of the proposed comparison. Next, a group of schools which represent in all probability the best efforts in the country to put into practice the ideas advocated by Morrison are selected and their practices are described. Finally, the broader aspects of likeness and unlikeness are summarized. These three steps follow in the order named.

8. FEATURES OF PRACTICE STRESSED BY MORRISON

The classification of school subjects into types.—First, Morrison stresses more than other writers in the field the fact that

secondary-school subjects may be classified into types. He says: "We can group all the subjects taught in the field of general education, and indeed in the field of vocational training so long as it is at the secondary level, into five different types, which characteristically differ among themselves in the nature of their objectives and in the nature of the learning process." 2 The types which Morrison recognizes are: The science type, the appreciation type, the practical-arts type, the language-arts type, and the purepractice type.

A 5-step teaching procedure.—Second, Morrison advocates a 5-step teaching procedure which applies to the science type of subject matter and, with modifications, to the practicalarts type.3 These five steps are designated as follows: Exploration, presentation, assimilation, organization, and recitation. The nature of the work to be done in each of

these steps will be briefly indicated.

The exploratory period.—The chief purposes of the exploratory step are "economy, the establishment of apperceptive sequence, and orientation." 4 Economy of time both for the teacher and the learner is obtained when pupils are not taught over and over again what they already know, if they are not required to go through the motions of acquiring an attitude, concept, or understanding which they have acquired already. Exploration discovers those pupils who may be excused from work on all or part of the unit. The exploratory step must semehow reveal the pupil's experiential background for the work to which he is to be assigned. The establishment of apperceptive sequence refers, of course, to a principle of long standing in education, namely, that of securing continuity between the pupil's past experiences and the experiences which are to come. Orientation as used by Morrison refers to the teacher. The teacher needs and should get such direction and orientation-from the exploratory step as will enable him to know how best to proceed in

Morrison, Henry C. The Practice of Teaching in the Secondary School. Chicago, Ill., University of Chicago Press, 1981, p. 92.

Ibid., p. 256. 4 Ibid., p. 256.

the next phase of the teaching and learning cycle, the presentation step.

The presentation period.—In the presentation step "the teacher approaches the task of imparting in its major essentials in a single period, if possible, the understanding which is the unit. In brief, through direct, convincing, or al presentation, he teaches the unit itself." The presentation is a sketch and not a finished picture." The presentation step must prepare the pupils for independent study during the ensuing assimilation period. This implies the clearing away of initial difficulties and the establishment of adequate motivation.

The assimilation period.—"At the end of the presentation period the classroom is organized as a study room in which day after day the pupils carry on the process of study which constitutes the assimilation stage in the learning of the unit."7 The assimilation period is a time of directed study. some pupils will learn much more rapidly than others, Morrison suggests the frequently practiced device of having available a set of projects, related to the unit, which the more rapid pupils may undertake voluntarily. These rapid learners later contribute their findings to the class through oral reports. The assimilation period ends so far as the individual pupil and the unit are concerned 8 with the passing of the mastery test. This test consists of an oral and subjective phase as well as a written and objective phase. However, in the practical-arts type of unit "the final assimilation test is the inspection and the acceptance of the completed project." 9

The organization period.—"When the teacher is convinced that assimilation has taken place in the class as a whole, organization is announced." During the organization step the class gathers up "the argument of the unit in outline form, with the essential supporting facts." The outline is "a coherent and logical argument and not merely an exhibit of facts." 10

¹ Ibid., p. 267. 1 Ibid., p. 272. 1 Ibid., p. 281. 1 Ibid., p. 330. 1 Ibid., p. 464. 10 Ibid., p. 325.

The recitation period.—The organization period is followed by the recitation period. "The recitation is to all intents and purposes the reverse of presentation." In the recitation the "pupils who have mastered the unit present it, the class and the teacher sitting as the audience." The recitation completes the 5-step teaching cycle which is the second distinctive feature of the practices advocated by Morrison.

Morrison's concept of a "unit."—Finally, the practices advocated by Morrison are influenced greatly by his concept of the nature of a unit. Sufficient evidence has been given to dispel the native notion that the unit was invented by Morrison. That he has done much useful thinking about the nature of the learning unit no one would deny. Morrison conceives a serviceable learning unit to be "a comprehensive and significant aspect of the environment, of an organized science, of an art, or of conduct, which being learned results in an adaptation in personality." This definition clearly extends the idea of a unit to include all five types into which Morrison classifies the subjects of the secondary school.

The subdivisions of the unit are called elements. The unit may contain a large number of elements, or only two or three, or even only one. In the last case the unit is itself elementary. The nature of the unit and the relation of the element to it are better set forth in limited space by illustration than by explanation. For example, a unit in general science might be "the water supply." The elements of this unit might be listed as: The pumping station, street mains, house connections, pressure, metering, and the standpipe. Or a unit in social science might be "how the community is controlled," and the elements might be listed as: What would happen if everybody did as he pleased, public opinion and good citizenship, the family and home, the church, the press, and local government.

n Ibid., p. 328. s Ch. I, Pt. II.

¹³ Morrison, Henry C. The Practice of Teaching in the Secondary School. Chicago, Ill., University of Chicago Press, 1931. pp. 24-25.

⁴ Ibid., p. 288.

¹ Ibid., p. 183.

¹⁶ Ibid., p. 190.

A unit in mathematics might be "the equation." Its component elements might be listed as: A balance between quantities—if there is no balance there is no equation; what is added to, or subtracted from, one side must be added to, or subtracted from, the other side; one side can be multiplied or divided if the other side is multiplied or divided by the same number; we can transfer from one side of the equation to the other if we change the signs. 17

How units and their elements are discovered.—One's best judgment is the sole criterion for deciding what the units in a given subject shall be. No two persons working independently are likely always to agree on what is either comprehensive or significant. No orthodox series of units or component elements is sought. Once the unit has been decided upon, "the elements of the unit can be found roughly and tentatively through a priori analysis. Steadily improving analyses are, however, a matter of close observation of the learning process in the classroom, and especially of problem-case study, of inferences drawn from scientific analyses of the learning process . . . and beyond all else, of sound pedagogical judgment based on all the foregoing." 17

Sequence of units.—Mathematics and grammar are mentioned by Morrison as differing from the other sciences "in the severely logical nature of the sequence of the units." 18.

The unit must not be confused with the assimilative material.—
Morrison is very careful to emphasize the difference between the unit and what he calls the assimilative material. The units given represent certain understandings or concepts which the teacher desires the pupil to acquire. The elements represent what might be appropriately termed "subconcepts" or understandings which are essential to the larger understanding or the unit. In order to arrive at these understandings the pupil must perform many activities. He must read references, answer questions, solve problems, make reports, and enter into group and class discussions. These things to be done are the assimilative material. They are a means to an end. If they are confused with the unit itself then memorization of the assimilative material is likely to

17 Ibid., p. 237,

10 Ibid., p. 231.

result rather than the acquiring of the adaptation which the mastery of the unit itself can give.20

The guide sheet.—The assimilative materials are made readily accessible to the pupil largely through the device known as a guide sheet. In the science type of unit "the guide sheet is a series of problems focused upon the several elements in succession and upon the unit as a whole . . . each problem is an application of the principle or principles being learned. Texts in mathematics have very commonly been guide sheets." 21 The form and wording of the guide sheet must be adapted to the different levels of training. In the elementary school the guide sheet may be in the form of questions; later "the guide sheet contains simply references on the unit and its elements while the teacher is always at hand to furnish necessary immediate and personal guidance; later still, some pupils . . . dispense with the guide sheet altogether and use simply an outline of the course. have ceased to be pupils and have become students." 23

Three prerequisites to the teaching act.—Prior to the teaching act as Morrison conceives it three tasks must be completed. First, the units and their elements must be formulated; second, guide sheets must be constructed; and third, test materials must be developed.

The science and the appreciation types of teaching.—The following statements adapted from Morrison may help to make his position clear concerning the essential characteristics of units in the several types of subjects. The appreciation unit deals with values. The science unit deals with understandings. The appreciation unit differs from the science unit in that the former is often less definite and the procedure for mastering it can not be so definitely prescribed. In the appreciation type the teacher must not only know the subject matter which he utilizes but he must himself be a pattern of the values which he expects to establish. Constraint can not be used in lessons of the appreciation

^{**} Ibid., p. 185. ** Ibid., p. 306. ** Ibid., p. 311. ** Ibid., p. 365. ** Ibid., p. 339. ** Ibid., p. 285. ** Ibid., p. 352.

type. Morrison lays down the following principles for appreciation teaching: (1) Exploratory testing and selection of materials best adapted to the pupil's present level of appreciation, (2) illumination of the field by a competent teacher, (3) class discussion so that individual and group attitudes may react, (4) individual reports, (5) observation of results by noting the unsupervised preferences of pupils, (6) provision for voluntary projects, and (7) study of problem cases. The first five principles show clearly the influence of the five steps employed in lessons of the science type. The reader will have no difficulty in drawing the analogy.

Practical-arts teaching.—In discussing practical-arts teaching Morrison gives as an example of a unit "house construction." The unit may be mastered by completing one or more projects. Suggested projects are the building of a small house or the construction of various articles of furniture. Morrison regards the project as "the type of organization of assimilative experience which is suitable to practical-arts teaching and learning." 30 Pretests, or exploration, have a place in practical-arts teaching. However, "as the course goes forward and the teacher becomes better acquainted with the practical-arts side of his pupils' lives, the pretests .on successive units practically administer themselves."81 the pupils chance to be working on the same project, the regular oral presentation of the science type may be used. Generally, however, pupils will be working on different projects and oral presentation will be supplanted by mimeographed instructions or a suitable textbook.82 Work on the project is analogous to the assimilation period of the science type and as already stated testing for mastery follows automatically upon the completion of the project.

Language-arts and pure-practice teaching.—The five steps of science-type teaching become greatly modified if not atrophied in the language-arts and in pure-practice or drill subjects. Morrison includes in the language-arts type musical and dramatic expression, reading, speaking, and writing.³³

[&]quot; Ibid., p. 888. " Ibid., p. 808. " Ibid., p. 460. " Ibid., p. 469. " Ibid., p. 467.

Learning to spell is classed in the pure-practice type, more commonly known as drill. In both types of learning, practice is greatly emphasized and testing goes hand in hand with practice. In such subjects, "teaching itself is usually testing." Morrison conceives the drill or pure-practice form of learning to arise "through sheer repetition with little or no thought element involved." 35

Classroom equipment.—In transforming the classroom into a laboratory Morrison is not nearly so insistent upon the elimination of the traditional seats and desks as are the advocates of some other techniques characterized by the unit assignment. While the formal arrangement of seats and desks is a handicap, nevertheless it will do. He regards the ideal equipment, however, to be simple tables with tops of sufficient area to accommodate the charts with which the pupil may work, and substantial chairs not likely to become noisy with use. 36

Only differentiz are being stressed.—The preceding pages have presented a brief summary of some of Morrison's ideas concerning the practice of teaching in the secondary schools. An attempt has been made to stress those ideas which are more properly classed as differentize rather than those phases of his interesting book which have drawn more heavily upon the common heritage of the profession. In the pages which follow, facts will be presented concerning the practices of a group of schools operating under what they call the "Morrison plan." The reader should be able to judge without difficulty the extent to which their practices have been influenced by Morrison's ideas as well as the extent to which their practices probably provide for the individual differences of pupils.

4. PRACTICES OF SELECTED SCHOOLS OPERATING UNDER THE TERM "MORRISON PLAN"

Schools selected for intensive study.—To get a picture of teaching practices in schools reporting the use of Morrison's ideas a 15-page, follow-up inquiry was prepared and addressed to each school whose responsible head had estimated

4 Ibid., p. 539.

16 Ibid., p. 286.

⁴ Ibid., p. 529.

the plan to be functioning with unusual success. Sixty-one replies were received, each accompanied by considerable printed, mirreographed, and typed supplementary material which had been requested. After a careful study of the replies and supplementary materials, 54 schools were selected to represent best practices in connection with the Morrison plan. These 54 schools represent 18 States and all sections of the country. Visits were made to a sampling of the schools which were studied still more intensively by observation and interview.

Number of years the plan has been in use.—The median number of years during which the Morrison plan had been in use in these schools was two. In schools with total enrollments of 750 or more the median is three years. The range of use is from one to six years.

Size of the schools.—The median total enrollment of this group of schools being studied is 500. Five schools have enrollments of 51 to 100 and 16 have enrollments of more than 1,000.

Types of organization.—Sixty-five per cent of these schools are of the reorganized type, including grades 7 to 12, 7 to 9, 10 to 12, or 6 to 11. Twelve of the unreorganized schools include grades 9 to 12 and five include grades 8 to 11.

Reactions of pupils, faculty, community, and administration to the plan.—Thirty-eight schools report the pupils' reactions to the plan to be favorable, ten report them enthusiastic. The community is usually reported neutral, but in several cases the community is reported favorable or enthusiastic, and in only one case as somewhat unfavorable. Thirty-seven schools report the faculty favorable, 13 enthusiastic, and 5 neutral. Twenty-seven report the administration favorable, 17 enthusiastic, and 4 neutral.

Teaching steps followed in these schools.—The five teaching steps advocated by Morrison are followed in most of these schools. (Table 5.) However, an additional "testing for mastery" step is generally recognized. Whether testing of any kind constitutes a separate teaching step is a question which has no important place in this discussion. The essential fact is that the respondents from these schools are

willing to classify "testing for mastery" as a separate teaching step, whereas to Morrison it is the final phase of the assimilation step. Also a tendency to omit the exploratory step is noticeable. The reports show that teachers at times regard the exploratory step as a waste of time because frequently the pupils are known to have no mestery of any phase of the unit to be studied. In other cases where they possess a mastery of certain portions of the unit the degree of mastery often is known without a test. Two respondents recognize only the steps of presentation, assimilation, and recitation. In a third school the step of testing for mastery is added and in four schools the exploratory step is omitted. In a few schools the terms "review" and "introduction" are preferred to the terms "exploration" and "presentation." Some respondents also add the steps of "reteaching" and "retesting" to the foregoing. Of course these steps are indicated by Morrison if the first test does not show mastery. Another step sometimes reported is styled "recapitulation." This step is a summarization feature conducted by the teacher at the end of the recitation. The aim is to bring out essential facts and relationships which the pupils' activities may have failed to bring out.

Table 5.—Teaching steps followed by 54 schools

Step	Freq	uency	Steen	Frequency		
	Number	Per cent	Step	Number	Per cent	
Exploration Presentation Assimilation	50 54 54	93 100 100	Organization Recitation Testing for mastery	51 54 52	94 100 96	

Types of learning and of teaching under the plan.—Only the science type of learning and of teaching has been developed under the Morrison plan in all of the schools. (Table 6.) This fact is interesting because the science type is the only type, in Morrison's opinion, to which all of the five steps apply without modification.

TABLE 6.—Distinct types of learning and of teaching recognized under the plan

Type of learning and of teaching	Frequency		
	Number	Per cent	
Science Appreciation Pure-practice Practical arts Language-arts	54 36 30 26 25	100 67 56 48 46	

Ranking the various subject-matter fields in the order of the extent to which the offerings are presented to pupils

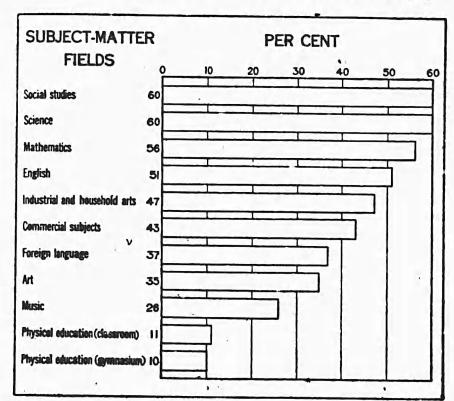


FIGURE 1.—Percentage of offerings in each subject-matter field presented under the Morrison plan

under the Morrison plan discloses further interesting evidence of the tendency to restrict the plan to subjects of the science type. Social studies, science, and mathematics occupy the first three ranks. (Fig. 1.) All these subjects readily lend themselves to presentation by means of the science-type unit.

An analysis of the extent to which the various commercial subjects are presented on the plan also shows the tendency to identify the Morrison plan with the science type of procedure. The percentage of all commercial offerings presented on the plan is 43. However, the percentages for such subjects as commercial geography and commercial law, each of which can be presented by means of science type units, are 61 and 60, respectively. These percentages are in marked contrast with the percentage for stenography, namely, 30. Stenography is classed by Morrison under the language-arts type. Other similar illustrations could be given. language-arts type of subject (foreign language, art, and music) ranks toward the bottom of the list of subjects offered on the Morrison plan in these schools.

These and related facts brought out in this study tend to show that, in general, the schools studied most frequently report the science type of teaching procedure as "Morrisonian." The practical-arts subjects occupy an intermediate position between the language-arts and the science types in the extent to which the Morrison plan is used. English probably occupies an intermediate position because some of its phases can be presented as science units, some as appreciation units, and

some as language-arts units.

Teaching steps used with each type of unit.—In the science type of unit all six steps are being used. A similar statement is true (regarding "testing for mastery" as a sixth step) for the practical-arts type of unit in such schools as are using the Morrison plan in the practical-arts field. In the appreciation unit all steps are reported by some schools, but the central tendency stresses the steps of presentation, assimilation, and recitation. In the language-arts and the purepractice types the organization step is very little used.

The preceding facts have shown that in schools using the so-called Morrison plan by no means all their work is done on the plan. Moreover, the plan is being used most extensively in the subjects which can be organized into science units or at least into units to which the five steps, with or without some modification, may apply However, even in such subjects much of the work is still being presented on

the traditional plan. For example, two-fifths of the offerings in the social studies and science in these schools are still being presented on the traditional plan. (Figure 1.)

Facts will now be presented to show the purpose of each of the five Morrison steps and the methods used in each step

in the schools selected for intensive study.

Purpose of the exploratory period.—Probably the purpose of the exploratory period as reported by these schools may be summed up as follows: To determine the pupil's preparation for the study of the new unit, to arouse his interest, to locate pupils needing special help, and to introduce the unit to the pupils. The items listed in Table 7 are obviously not mutually exclusive. One other purpose listed by schools wherein pupils are segregated into ability groups, was the detection of errors in the classification of pupils.

TABLE 7 .- Purpose of the exploration period

To determine the pupil's preparation for the study of the new	ency cent
unit	78
To determine the nature and extent of the pupil's experiential background	74
To arouse pupil interest	0.0
To diagnose the pupil's needs	63
To introduce the unit	59
To locate numile reading enocial halo	57
To motivate the audit of 1	56
To motivate the pupil's study	54
To discover vocabulary difficulties	28
To measure the pupil's progress by comparison with a score made later on the final mastery test.	22
	To determine the pupil's preparation for the study of the new unit

Methods used in the exploratory period.—The data show that no one method is used exclusively in the exploratory period (Table 8). Oral questioning, class discussion, and the use of a written, objective, pre-test of the essay type, are employed only occasionally in most schools. Schools in which the essay test is used report its use in such units as "sentence sense" and "punctuation" where functional testing is the most desirable sort of testing. A few schools report the use of the lecture in the exploratory step and one school uses the device of having the pupil write as many true statements about the unit as he can.

Table 8.—Methods employed in the exploratory period

20.0	Per	cent of sch	ools using	each
Method	Occa- sionally	Gener- ally	Always	Total
1	2	1	4	
1. Oral questioning. 2. Class discussion. 3. A written objective pre-test. 4. A written essay-type pre-test.	33 35 35 30	19 28 30 4	24 13 9 6	76 76 74 39

Time given to the exploratory step.—Fifty per cent of the respondents state that there is no approximately uniform proportion of time given to the exploratory step even in a given subject. The proportion is reported to vary according to the length of the unit, the ability level of the class, or the needs of the class. One school reports that one class period is the maximum amount of time given to the exploratory step. Those respondents making a numerical estimate say that from 3 to 13 per cent of the total time allotted to a unit is given to the exploratory step. The median estimate is 5 per cent.

Purpose of the presentation period.—The primary purposes of the presentation period are to give the pupils an over-view of the entire unit (reported by 91 per cent of the schools) and to arouse their interest (reported by 81 per cent of the schools). A third purpose stated by about half the respondents is that of correcting errors in pupils' thinking as discovered by the exploratory step. In this period the fundamental principles involved in the unit are stressed and pupils' interests are directed as well as aroused. Problems or difficulties are pointed out. At least one reply suggests that the presentation period may serve the purpose of teaching pupils the art of listening.

Methods used in the presentation period.—In the most common procedure used during the presentation period, the teacher tells the unit to the class as a story or sketches the unit in a talk or lecture (Table 9). After the story, talk, or lecture pupils are encouraged to ask questions. Several respondents make it clear that pupils are encouraged to ask

questions during the talk as well as after. Class discussion may, but usually does not, follow the presentation. A presentation-test paper is required in some schools. Re-presentation may follow for the entire class, or for small groups or for individuals, if necessary.

TABLE 9.—Methods used during presentation period

*	Per	Per cent of schools using each					
Method	Occa- sionally	Gener- ally	Always	Total			
1	2		4	-			
 The unit is told to the class by the teacher as story, or sketched by the teacher in a tal or lecture. 	T .						
2. After the story, talk, or lecture, pupils ar	22	28	41	91			
encouraged to ask questions. 3. Class discussion follows story, talk, or lecture.	- 23	31	20	74			
6. A presentation-test paper is written by eac	28	17	15	50			
pupil	00	9	15	57			
common errors, if any	24	11	9	46			
 Re-presentation is made by individual or sma group conferences in case mistakes are largel 		•		30			
individual	. 11	17	15	43			

Other methods occasionally mentioned are: An outline of the unit is placed on the board by the teacher as he talks; the unit is presented in mimeographed form with explanation by the teacher; oral, rather than written, presentation tests are given.

Time given to the presentation period.—Forty-eight per cent of the respondents say there is no approximately uniform proportion of time given to the presentation period, even within a given subject. Respondents making a numerical estimate report from 3 to 18 per cent of the total time allotted to a unit to be given to the presentation period. The median percentage is 9.

Purpose of the assimilation period.—Eighty-three per cent of the respondents say that "mastery of the unit by the individual pupil" is the purpose of the assimilation period. Other respondents prefer the practically synonymous purpose of "securing desired adaptations in the pupil as a result of his work with the materials of the unit." A few point out

that a by-product of the assimilation period is the "training of the pupils in good study habits."

Methods used during the assimilation period.—The various activities of teacher and pupils during the assimilation period are listed in Table 10. The table is practically self-explanatory. The distance which separates Items 4 and 14 shows that in most schools the assimilation period is not made an exclusively individual-work period. Only 7 per cent of the schools report that the pupil is always required to work individually during the assimilation period. That pupils work part of the time individually and part of the time in small groups is a practice much more commonly reported. prominent supervised or directed study element in the assimilation period is shown by I tems 1, 2, and 3. The testing for mastery phase of the assimilation period to which Morrison refers 37 is not a part of the practice of these schools although the teacher occasionally gives objective tests to discover pupil progress. (Item 9.)

Table 10.—Methods used during the assimilation period

0	West-1	Pe	cent of schools using each				
	Method	Occa- sionally	Generally	Always	Total		
		1		4			
1.	Teacher observes pupils' work and points out						
	Teacher answers questions raised by individual	70	7	15	93		
2	Teacher guerranta hatta	74	7	11			
2.	Teacher suggests better study methods. Pupils work part of the time individually, and part of the time in small groups.	65	19	4	87		
	difficulties informal discussions of common	54	26	7	87		
B.	Classroom is made a etradu	67	15	4	86		
		24	11	48	82		
		39	28	15	82		
•	progress objective tests to discover pupil	46	26	0	81		
	Pupil may work on supplementary topic of his	61	7	7	76		
	punil	43	20	13	76		
	Teacher calls for brief reports from individual	4	9	48	72		
	progress ensay-type tests to discover pupil	63	7	2	72		
L	Each pupil works individually at all times	28	7 17	0	35		

Morrison, Henry C. The Practice of Teaching in the Secondary School. Chicago, Ill., University of Chicago Press, p. 313.

Additional methods used during the presentation period and reported by one or more schools are: Oral reports are given by the most capable pupils on their supplementary topics and projects; the various phases of the work on the unit are closed with "culminating discussions"; the teacher may lecture on points difficult for the entire group to cover because the supply of reference material is inadequate for the size of the class.

Contents of the guide sheet.—The contents of the mimeographed guide sheet varies considerably as is shown by Table 11. The list of supplementary projects (Item 2) is usually in question or problem form. The guide sheet in some cases also carries extra projects for those capable of working only on the minimum level, a feature tending to break the monotony of work on the lowest level. Some guide sheets carry an outline of the unit on each level and others carry lists of words for vocabulary study.

TABLE 11.—Contents of mimeographed guide sheet

		Frequency in per cent						
•	Contents	Occa- sionally		Always	Total			
	1	3	3	4				
2 A list of st	s for readingupplementary projectss for studye of minimum essentials	57 54 50 44	6 6 7 7	9 9 4 7	72 69 61 59			

Time required for the assimilation period.—Forty-six per cent of the schools report no approximate uniformity of time required even within a given subject. The remaining respondents estimate that the assimilation period takes from 38 to 75. per cent of the total time given to a unit with the median at 65 per cent.

Purpose of the organization period.—In 74 per cent of the schools the purpose of the organization period is to require or to give an opportunity to each pupil to arrange in logical form the results of his studies or activities during the assimilation period. In 65 per cent of the schools the purpose of the

organization period is to require or to give an opportunity to each pupil to organize logically his solution of the unit or problem. Several schools point out that the organization period is not always employed, as, for example, in appreciation, language-arts, or pure-practice lessons. In other schools the work during this period is regarded, even in the science-type lesson, as the least satisfactory of any done during the 5-step cycle. One respondent adds that the purpose of the organization period is to lead up to, and to prepare for, the recitation.

Methods used during the organization period.—Eighty-five per cent of the schools report that during the organization period the pupil outlines or briefs the results of his studies or activities in connection with his attempt to master the In more than half the schools, if the unit is a true problem, the pupil (1) forms a hypothesis for its solution, (2) indicates the data which he has collected, (3) shows how the data support the hypothesis, and (4) draws conclusions. In 41 per cent of the schools, if the unit is a true problem, the pupil is required to defend his solution in oral discussion with the other pupils. In 39 per cent of the schools, in case the unit is not a true problem, the individual pupil is required to read his organization outline or brief to the class for discussion and criticism. Another procedure reported by a few schools is to divide the class into groups of two or three Each small group works on one phase of the problem. Later a committee of three pupils organizes the reports of the several committees into the complete written unit.

Time required for the organization period.—Forty-six per cent of the schools report no approximate uniformity in the amount of time allotted to the organization period, even within a given subject. In the remaining schools the proportion of time given to the organization period is from 3 to 23 per cent of the total time allotted to the unit, with the median at 9 per cent.

Purpose of the recitation period.—Eighty-three per cent of the schools report the chief purpose of the recitation period to be to test "the pupil's ability to present previously collected and organized facts and principles in such a way as to arouse a desirable emotional attitude in his audience or

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to convince its intelligence of the soundness of a position taken." Others add that the recitation period is an aid to the assimilation process or that it provides a social situation and an audience.

Methods used in the recitation period.—Some of the methods used during the recitation period are shown in Table 12. The table is self-explanatory. In addition to these methods shown in the table: Pupils may give floor talks covering the entire unit; a dramatic representation of the unit or some phase of it may be given; in science, particularly, laboratory demonstrations may be given; and graphical or artistic presentations—by means of charts, drawings, paintings, or handwork, of portions of the unit—may be displayed and explanations given.

A few schools point out that many of the methods may be pursued during the assimilation or organization periods and that the effect of a regularly required recitation period is to halt the progress of the brighter pupils. However, this latter effect may be desirable so long as the brighter pupils have worthy supplementary work to occupy their energies.

TABLE 12 .- Methods used in the recitation period

	Method Frequence per on	
1,	Pupils give floor talks on some topic or phase the unit	91
2.	Pupils give written reports on some topic or phase of the unit	78
8.	Oral reports are given on supplementary topics	74
4.	General discussions are held on particularly good floor talks	72
5.	Written reports are given on supplementary topics	67
6.	Detates are sometimes held	52

Time required for the recitation period.—Fifty-two per cent of the schools report no approximate uniformity in the amount of time given to the recitation period, even in a given subject. In the remaining schools it is estimated that from 3 to 25 per cent of the total time allotted to the unit is given to the recitation period. The median estimate is 10 per cent.

Summary of median distributions of time given to the various steps.—The median percentages of time given to the steps of exploration, presentation, assimilation, organization, recitation, and testing for mastery are shown in Table 13. More



than three-fifths of the time is given to assimilation or to the period wherein pupils work either individually or in small groups under the direction of the teacher. The percentage given to testing for mastery must be understood to be the amount of time set aside for formal testing. During the periods of assimilation, organization, and recitation the teacher undoubtedly is acquiring many evidences of mastery.

TABLE 13.—Median percentage of the total time allotted to a unit given to each teaching step

Teaching or learning step	Pér cent	Teaching or learning step Pe	r cent
Exploration	5	·Recitation	10
Presentation		Testing for mastery	
Assimilation	65		أست
Organization	9	Total	. 100

Testing for mastery.—The mastery test follows the recitation period in 61 per cent of these schools, the assimilation period in 20 per cent, and the organization period in 19 per cent. This shows a distinct departure from the Morrison technique which makes mastery testing a phase of the assimilation period. However, the fact should be kept in mind that the place of the mastery test, as Morrison sees it, depends to a large extent upon the type of unit—whether science, appreciation, practical-arts, language-arts, or pure-practice.

Practically all schools report that mastery tests are generally mimeographed and objective. However, about a third of the schools sometimes use both oral and subjective or essay tests.

Eighty-one per cent of the respondents report that their mastery tests measure informational or factual material; 63 per cent believe their mastery tests to measure skill; 61 per cent are of the opinion that their mastery tests measure adaptations; and 52 per cent believe they are measuring attitudes and habits.

The evidence submitted in the form of printed or typed tests suggests that no adequate measurement of attitudes, habits, or adaptations is going on unless it be by means of a type of testing which is based upon subjective judgments, or on what Morrison calls "rapport" testing. One principal

¹⁰ Ibid., p. 814.

says: "We are trying to supplement objective tests of mastery with rapport testing as suggested by Morrison."

The respondents in general regard their tests for attitudes, habits, and adaptations as in the experimental stage. They are generally agreed that such tests should not be aimed at mere mastery of the data, or assimilative material, from which the attitudes, habits, or adaptations, presumably will be acquired by the pupil. Considerable confidence is placed by some respondents in essay-type tests in judging the extent to which attitudes, habits, or adaptations have been acquired. The pupil's true reaction to the assimilative material is judged by other respondents to be best secured when he assumes a definite position in a theme or oral report and defends it. Another school points out that perhaps the real test of the acquisition of the desired attitudes, habits, and adaptations comes through the pupil's subsequent conduct. For example, the outcome of an appreciation unit in English sometimes might be tested best by reference to the later free reading records of the pupils.

Pupils excused after the exploratory test.—In only 28 per cent of the schools are pupils even occasionally excused from work on the unit as a result of the exploratory step. Sixty-three per cent of the respondents definitely say they do not do so. Excused pupils almost always work on elective supplementary projects. In a few cases they spend their time on their other subjects. Sometimes they use the time for various forms of pupil service to the school. Occasionally they spend the time in free reading in the

library.

Re-presentations .- Sixty-five per cent of the schools find that necessary re-presentations do not constitute a serious hindrance to the efficient operation of the 5-step teaching cycle. Twenty-two per cent have had the opposite experience. Most schools find re-presentations unnecessary except to individuals or small groups.

Keeping the class together. - More than half the schools find it practicable to require that all pupils complete a unit before any pupils take up the next unit. Those schools having difficulties in this respect usually have not succeeded

in differentiating the work of the unit for the various ability levels.

How units are planned.—In 46 per cent of the schools each teacher works out the units for her classes subject to the approval of the principal. In another 20 per cent of the schools the teacher works out the units subject to the approval of the department head. In 19 per cent of the schools the teacher works out the units for her classes subject to the approval or suggestions of no one. In a third of the schools, after the teachers have worked out the units for their classes, conferences of teachers having the same pupils in their classes are held. The units are revised in these conferences to provide for better correlation and integration of the pupil's total assignments in all subjects.

In several schools a special committee of teachers plans the units of a given subject for all teachers of that subject in the county or city district. These units are subject to minor modifications by each teacher who uses them. In one instance the committee prepares only a few sample units and submits outlines for most of the units. These outlines are filled in by the individual teachers. Usually these committees work under the direction of a special county or city supervisor. In two instances supervision is furnished by specialists from schools of education. In very large high schools where several teachers have sections of pupils in the same subject and grade these teachers form a committee to develop units in the given subject. They are usually directed in their efforts by the department head.

The revision of units.—In 61 per cent of the schools units are revised continuously whenever change becomes necessary or a better plan is discovered. In the remaining schools the units are revised each semester or each year.

Correlation of units.—In 41 per cent of the schools a systematic effort is made to correlate the units of one subject with the units in the other subjects which the pupil may be carrying at any given time. Regular conferences of the teachers concerned are scheduled wherever this correlation goes on successfully. These schools frequently report the use of what are known as "departmental cuts" under the

Dalton plan. For example, a research theme in civics may be used by the English department as a basis for teaching methods of preparing a bibliography or of constructing a long theme.

Differentiated assignments.—In 70 per cent of the schools separate assignments are provided on each unit for each ability level. The typical number of levels provided for is 3, the range being from 2 to 4 levels.

In 67 per cent of the schools considerable choice of topics, references, and problems is allowed within the assignment for any ability level. This choice, however, is much more commonly and freely provided for the average and above-average levels than for the lowest level.

In three-fourths of the schools in which differentiated assignments are provided the pupil is required to begin with the work of the lowest ability level and to advance through it and the work of the higher levels as far as he can. In the remaining schools the teacher usually decides the ability series with which the pupil should begin. In one school the doubtful practice of permitting the pupil to make his own choice is followed. In no school are mental-test results the sole criterion for deciding with which saries of assignments the pupil shall begin.

The typical procedure in differentiating assignments is to give the slower pupils quantitatively less to do and also to give them work which is qualitatively less difficult in that it requires less intelligence. The process is reversed for the brighter pupils, giving them quantitatively more to do as well as work which requires a higher degree of intelligence. Sometimes a single series of problems is used, so graduated that the easiest problems come first and those which call for the highest type of mental ability come last. In other cases each problem, project, or topic counts so many "points." Definite standards are set up requiring that a certain number of points be earned in order that the pupil may be awarded a certain mark corresponding to a given level of achievement. In a few schools slow pupils are awarded any given mark for a smaller number of "points" than are required of the faster pupil. More schools report attention to differentiation for brighter pupils than for slower pupils.

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Pupils' interest in the method.—Eighty-five per cent of the schools report that more pupils are motivated by true interest under this 5-step cycle of work on the unit plan than are so motivated under the traditional plan. Interest is here defined as doing the work for its own sake because the pupil sees it as a self-adopted goal. The activity and industry of the pupils are frequently cited as evidence. However, some schools believe that an excellent teacher might use other methods and secure a degree of interest just as high.

About a fourth of the schools report that some pupils loaf or refuse to work under the plan. In response to the question "What measures are taken with such pupils?" several types of responses were made: "We do not look upon the matter as a refusal to work but rather as indifference to any mental exertion." "We have had some cases where pupils thought they did not know how to work. In such cases an efficient teacher has a chance to save pupils who would be lost under the conventional procedure." "Investigations are made of the pupils' previous records to locate the difficulty. Individual conferences are held with the pupils. An attempt is made to organize the unit so that even the few who refuse to work will be interested." Other measures reported were: Compulsory work after school, conferences with parents, individual guidance, and special coaching classes.

Equipment of classrooms.—Sixty-one per cent of the schools report an ample library of reference books; about half of the schools have movable tables and chairs in the rooms given over to work on the unit plan; less than half report all necessary equipment; and less than a third provide file cases in the classroom for pupils' written work, tests, records, and other materials. Only 11 per cent of the schools check all four of the above items. One school reports that the "rooms are largely seated with fixed desks because after a trial both teachers and pupils preferred to go back to fixed desks."

This experience, however, is not typical.

The school day.—The typical length of the school day in these schools is 360 minutes, with a range from 300 to 435 minutes. The median number of periods per school day is between 6 and 7. The typical length of the period is 55 minutes, showing the influence of the arguments which have been

advanced in the past few years for longer periods in which supervised or directed study may be carried on.

Home study.-Eighty-one per cent of the respondents say their plans presuppose that pupils will give some time to home study. The typical expectation is one hour per day. However, this expectation varies for pupils of different ability levels and for pupils of different grades. A small number of respondents say they try to have pupils do all their work in school, although occasionally some home work is desirable. There is perhaps too much tendency to expect slow pupils to do more home work than bright pupils. However, this expectation is based on the assumption that both types of pupils are working on the same assignment level. The expectations are invariably higher for the upper grades than for the lower grades. The typical expectation by grades is: Seventh grade, 30 minutes per day; eighth grade, 45; ninth grade, 60; tenth grade, 90; eleventh grade, 120; and twelfth grade, 180.

The marking system.—There are no characteristics which differentiate the marking systems of this group of schools from the marking systems of a larger group of schools reported later in Chapters I and II of Part IV, except that the present group fails to show as much variability as the other larger group of schools just mentioned. About a fourth of the schools now being studied report the use of a percentage system of marking; more than a third the use of a 5-point letter, number, or other symbol scale; nearly a fourth the use of a letter system with percentage equivalents; a few the use of 4-point or 6-point letter systems, or letters with plus and minus signs. Needless to say such qualitative marking systems at best suggest a compromise with Professor Morrison's idea that each unit should be mastered by each pupil. Conceivably different marks might be used to indicate different rates of progress but they are not being so used in these schools.

Reports to parents.—The typical report to parents from these schools shows: A mark indicating the quality of the pupil's performance in each subject; the pupil's industry; deportment or character traits; and attendance. In addition, some of the reports show the pupil's rank in class, facts about his health, and the extent to which he participates in extra-

curriculum activities. One school sends a letter to parents whenever a failing mark is placed upon the report card.

Report cards are sent out, typically, each six weeks. A few schools send out reports to parents at intervals of 4, 5, 8, 9, 10, or 12 weeks.

Promotion.—In about three-fourths of these schools a pupil is promoted in a subject only when he has finished the units for that subject. However, several schools point out that a minimum assignment is satisfactory for promotion. In some schools a pupil who has failed to complete one or more units at the end of the year is permitted to take these units the following year without repeating units which have already been passed. Many schools report the purely common-sense procedure of promoting on the basis of what seems best for the child. Over-age pupils are frequently In some schools semester tests play an important passed on. part in the pupil's promotion. In all schools the pupil's age and mental ability, the nature of the subject-matter, and the number of trials which the pupil has made at the unit influence promotion.

Acceleration and retardation.—About a third of the respondents aim to accelerate the progress of the brighter pupils. However, typically, enrichment is favored. During the year 1929-30, about 7 per cent of the pupils did one and one-half year's work as compared with 5 per cent who did only one-half year's work. The most acceleration and the least retardation is reported in social studies which leads the list in the percentage of its offerings presented by means of the unit assignment and the 5-step teaching cycle. (Fig. 1.) The least acceleration and the most retardation is reported for foreign language and mathematics, the former subject-matter field ranking well toward the bottom of the list in the percentage of its offerings which are presented by means of the unit plan.

5. SOME BROAD COMPARATIVE ASPECTS

In none of the schools studied are all of the courses organized on the unit plan, and in the typical school considerably less than half of its offerings is presented by means of the so-called "Morrison plan." Those subject-matter fields,

wherein the highest percentages of offerings are presented by means of the plan, are fields which properly may be classified under the science type. In general, respondents using the term "Morrison plan" to describe certain of their practices have identified the term with the 5-step teaching and learning cycle which Morrison regards as applicable only to subjectmatter of the science type. Typically, the purposes of each of the five steps—as set forth forth by these respondents, the methods employed in each step, and the proportion of time allotted to each—are in harmony with the practices advocated by Morrison. However, a wide variability of practice is characteristic of this group of schools in each and every respect. Testing for mastery is regarded in these schools as a sixth step following the recitation period rather than a culminating phase of the assimilation period. In a few instances the units used in these schools follow Morrison's ideas closely. Some of these units are included in Chapter VI, Part II. However, in this important respect also a wide variability exists. This variability is closely related to an effort made in these schools to differentiate each unit for different levels of ability, an effort not urged by Morrison except as he suggests supplementary projects for the brighter pupils. Most schools studied lack the ideal classroom equipment for class work wherein directed study is emphasized and pupils spend a large proportion of their time working as individuals or in small groups. The lengthened period which is typical of these schools will be regarded by many as in harmony with a procedure which emphasizes directed study. The increased requirements with respect to home study in the upper grades of the secondary school may also seem to be proportioned to the increased power of independent study which should be developed in more mature pupils. The marking and promotion systems in the schools studied show no influence of Morrison's ideas. All practices considered, however, as they have been reported in the preceding pages, the conclusion is inevitable that certain ideas incorporated in Morrison's "Practices of Teaching in the Secondary School" have modified classroom procedures in these schools to an important extent.

CHAPTER III: THE DALTON PLAN

1. AN OVERVIEW

Number of schools using the plan.—The preliminary inquiry indicated that the Dalton plan was reported in use by only 162 schools, or by less than 2 per cent of the 8,594 schools whose replies were tabulated. (Table 14.) Moreover, the plan was used with estimated unusual success in only 15 schools, or in less than 2 in each 1,000 schools included in the tabulations. A modified Dalton plan was reported in use by 486 or 6 per cent of the schools whose replies were tabulated.

Total enrollment and use of the plan.—The percentage of schools reporting the use of the Dalton plan shows a tendency to increase as the total enrollment increases. (Column 4.) The same tendency is well marked in the case of the modified Dalton plan. (Column 8.) The percentage of schools of any size in which either the Dalton plan or a modified Dalton plan is used with estimated unusual success closely borders zero. (Columns 6 and 10.)

TABLE 14.—Schools using the Dalton plan or a modified Dalton plan, classified according to total enrollment

Enrollment group		► Dalton plan				Mo	odified Dalton plan			
	Num- ber of schools report- ing	Use tim		Use with estimated unusual success		Use		Use with estimated unusual success		
^		Num- ber	Per cent	Num- ber	Per	Num- ber	Per	Num- ber	Per	
1	3	8	4		6	1	8	,	10	
50 or less	1, 476 1, 994 2, 391 1, 128 561 304 740	27 28 44 24 3 12 24	2 1 2 2 0 4 8	3 3 3 1 1	0 0 0 0 0 0	50 85 123 71 - 52 84 71	3 4 6 7 9 11	7 10 15 7 6 1		
Total	8, 594	162	2	15	0	496	•	52		

Type of organization and use of the plan.—Type of organization exercises no appreciable influence upon the extent to which either the Dalton plan or some modification of the plan is used. (Table 15.) All types of organization are represented in uniformly small proportions.

TABLE 15.—Schools using the Dalton plan or a modified Dalton plan, classified according to type of organization

		Dalton plan				Modified Dalton plan				
Type of organization	Num- ber of schools report- ing	U	Use with estimated unusual success					Use w timat usual		
		Num- ber	Percent	Num- ber	Percent	Num- ber	Per cent	Num- ber	Per	
1	1	3	4		•	7	8	•	10	
9 to 12	4, 304 1, 284 638 614 308 105 1, 341	65 34 9 20 5 4 25	1 2 1 3 1 4 2	5 3 1 1 1 1 2	0 0 0 0 0 0	198 102 23 48 28 5 82	5 8 4 8 9 5	25 10 5 1 3 1	in-	
Total	8, 594	162	2	15	0	486	6	52		

Geographical distribution of schools using the plan.—Forty-two States are represented by the 162 schools reporting the use of the Dalton plan. No State is represented by more than 16 schools. Schools in which the Dalton plan is used in any State do not exceed 7 per cent of the schools of that State, whose replies were tabulated. In many States the percentage of use is as low as 1. The maximum percentage of use with estimated unusual success reported by any State is 1. Forty-seven States are represented by the 486 schools reporting the use of a modified Dalton plan. The maximum number from any one State is 61. The maximum percentage of use is 26, and the maximum percentage of use with estimated unusual success is 6.

A general impression.—These figures leave the general impression that a slight but widely disseminated tendency exists to use the Dalton plan or some modification of it, and that a surprisingly small number of respondents using the

plan have any considerable measure of confidence in its success. Data from an inquiry on provisions for individual differences sent out to a selected group of schools by the United States Office of Education in 1928 point in a similar direction. Of 1,872 schools whose replies to the 1928 inquiry were tabulated, only 110, or about 6 per cent, reported the Dalton plan to be in use. The 1928 inquiry form was not planned to indicate the use of a modified Dalton plan or to indicate use with estimated unusual success.

1. SELECTING SCHOOLS FOR INTENSIVE STUDY

The follow-up inquiry.—To secure detailed information concerning the practices of schools using the term "Dalton plan" a 15-page, follow-up, inquiry form was prepared. Copies of the form were addressed to 190 schools; 15 which had reported on the preliminary form the use of the Dalton plan with estimated unusual success, 52 which had reported the use of a modified Dalton plan with estimated unusual success, and 123 which had reported the Dalton plan in use.

The responses.—Ninety-three replies were received. Fortynine replies explained either that a study of the inquiry form had revealed that what the school was doing was not the Dalton plan, or that the Dalton plan had been discontinued. Typical statements are: "The plan on an extremely modified scale was used in the American and European history classes. It is not in use this year." "Any points of the Dalton plan which have been in use in this school have been so worked over that the plan is not now recognizable." Forty-four inquiry forms were returned filled out. Twelve of these were discarded because the practices reported in them obviously were related not even remotely to the practices of a Dalton school. Returns from 32 schools were selected for tabulation and detailed study. Twenty-four of these had reported the Dalton plan in use; 7 had reported a modified Dalton plan in use with estimated unusual success; and 1 had reported the Dalton plan in use with estimated unusual success.

¹ See sec. 3, The Scope: A Preliminary View, p. 4.

S. A COMPARATIVE STUDY

Criteria.—The criteria for this comparative study are the differentiating characteristics which distinguish the practices of a Dalton school from the traditional school, as advanced by the originator of the Dalton plan, Miss Helen Parkhurst.

Steps involved.—The procedure here is identical with that followed in Chapter II, Part II, in dealing with the Morrision plan. First, a brief statement will be made concerning the distinguishing characteristics of the Dalton plan. Second, a description will be given of a group of schools selected because in all probability their practices are the closest approximation to the practices of a Dalton school to be found anywhere outside of Children's University School in New York.³ Third, the broader comparative aspects will be summarized.

& SALIENT FEATURES OF THE DALTON PLAN

Basic principles and implied aspects of organization.—The three fundamental principles on which the Dalton plan is based are: (1) Freedom; (2) cooperation, or the interaction of group life; and (3) economy of forces or the budgeting of time.4 The two principles last mentioned antedate all other educational experiments, according to Miss Parkhurst.5 These two principles find expression through three phases of organization which are essential to the establishment of any school upon the Dalton plan. First, the school must be organized on the basis of a unit technically known as a "house." Translated into prevailing terminology a "house" is a home-room composed of pupils from all grades in the school instead of pupils from one grade or half-grade, as is usually the case. In other words, the "house" includes a cross section of the entire school enrollment. Theoretically at least, such an organization contributes to the greater



¹ Parkhurst, Helen. Education on the Dalton Plan. New York, E. P. Dutton & Co., 1922; and An Explanation of the Dalton Laboratory Plan. London, Eingland, Dalton Association, 1936.

^{&#}x27; Miss Parkhurst's own school.

Parkhurst, Helen. Education on the Dalton Plan. New York, E. P. Dutton & Co., 1922, pp. 19 and 24.

¹ Mimeographed statement issued by Miss Parkhurst to her_students at the Ohio State University, summer session of 1928,

interaction of the groups which compose the school.6 Second, the traditional classrooms must be transformed into subject-matter laboratories.7 In these laboratories the pupils of all grades will work simultaneously on their several tasks either individually or in groups. This feature of organization sets the stage for greatly increased interaction of group To transform classrooms into subject-matter laboratories fundamental changes in equipment are necessary. Laboratories should be equipped with movable tables and chairs, with libraries of reference books, with essential filing devices, and with all necessary maps, charts, visual aids. and other apparatus for independent study by individuals and by groups in the subject-matter field to which the laboratory is assigned. Third, the fixed daily schedule of classes must be abandoned.8 Upon this third feature, in Miss Parkhurst's opinion, the principle of the budgeting of time is dependent. No school by any stretch of the imagination could be regarded as a Dalton school while maintaining the traditional fixed schedule of classes. The "house" and the "laboratory" are likewise essential not only to the interaction of group life but also to the functioning of the principle of the budgeting of time. Moreover, all three phases of organization contribute to the freedom under which the pupil works. Unless the school is organized into "houses," unless the classroom has been transformed into the "laboratory," and unless the fixed daily schedule of classes has been abandoned the fundamental principles of the Dalton plan are not characteristically provided for and in a fundamental way the school differs from a true Dalton school. Still other criteria should be considered in any attempt to determine the extent to which a school's practices approximate the practices of a Dalton school.

All subjects and grades must be affected by the plan.—In the words of the originator "the Dalton plan is more a sociological

Parkhurst, Helen. An Explanation of the Dalton Laboratory Plan. London, England, Dalton Association, 1926, p. 6.

Ibid., p. 4.
 Parkhurst, Helen. Education on the Dalton Plan. New York, E. P. Dutton & Co.,
 1922, p. 40; and An Explanation of the Dalton Laboratory Plan. London, England, Dalton Association, 1920, p. 5.

than an academic venture . . . Its aim is to transform not a fragment, but the whole of the school day, and the entire school as well." 9 By implication this statement sets up another criterion. For example, a school can not put its ninth-grade English or algebra on the Dalton plan and leave other subjects to traditional presentation. Some form of the unit assignment resembling the "contracts" of the Dalton plan might be used under such conditions but it would be unfortunate to call the procedure the Dalton plan. The entire school must be affected by the Dalton plan if the plan is really in effect at all. "The Dalton plan should primarily be regarded as a way of school living." 10 "The pupils of the several grades within the school intermingle as a community. The Dalton plan insists upon this constant reciprocity and intermingling." 11 "Use home life as a model for school living . . . give the pupils their jobs and let them move in and out about the laboratories at will, as they look for the book or the teacher that will unravel a difficulty." 13

The "job".—The Dalton school resembles the traditional school in maintaining a system of grades and a curriculum suitably adapted to each grade. However, the Dalton school differs from the traditional school in the way the curriculum is presented to the pupil. In the Dalton school the curriculum for a given grade is broken up into as many allotments as there are months in the school year. Each allotment forms a large unit called a "job" which by definition is a month's work in all subjects. The "job" is carefully integrated and correlated. By means of "departmental cuts" a great deal of overlapping of assignments and unnecessary repetition are avoided. The assignments constructed by individual teachers for their own subjects are

Parkhurst, Helen. An Explanation of the Dalton Laboratory Plan. London, England, Dalton Association, 1925, p. 2.

¹⁰ Ibid., p. 8.

u Ibid., p. 6.

[&]quot; Ibid., p. &

¹¹ Ibid., p. 6.

[&]quot; Ihid., p. 4.
" Ibid., p. 6.

[&]quot;Parkhurst, Helen. Education on the Dalton Plan. New York, E. P. Dutton & Co., 1922, p. 52.

critically examined in a joint meeting of the entire staff.¹⁷ Such joint meetings are the foundation of integration and correlation.

The "job book."—The "job" is presented to the pupil in the form of a "job book." The "job book" consists of a set of mimeographed assignments or guide-sheets in which the work the pupil is expected to do, or his "job," is clearly indicated. The "job" is usually stated in the form of problems to be solved. Each pupil in a given grade receives the same "job." This does not preclude a differentiation of tasks within any given "job" for pupils of different capacities or interests. Each "job" must be completed in all respects before the pupil may undertake the next "job."

Unit, contract, assignment, and allotment.—The word "unit," which plays a conspicuous part in this entire study of plans characterized by the unit assignment, is used in a technical sense in the Dalton plan to mean one day's work in a subject." The term "assignment" or "allotment" or "contract" as used in the Dalton school comes closer to meaning what Morrison, for example, means by a unit. However, the assignment for the average pupil in any subject-matter field, under the Dalton plan, is the pupil's work for 20 school days or one month.

The bulletin board.—The bulletin board figures prominently in a Dalton school. It must be read by each pupil each morning.²² The pupil can not budget his time, that is, can not plan his work for the day, unless he has obtained the information which the bulletin board carries. From the bulletin board he takes notes concerning announcements which will affect his plans for the day. He discovers whether he has been summoned by one or more teachers for individual conferences, and if so, where and when the conferences are to be held. He makes a record of small group conferences

if Parkhurst, Helen. An Explanation of the Dalton Laboratory Plan. London, England, Dalton Association, 1926, p. 4.

¹⁸ Parkhurst, Helen. Education on the Dalton Plan. New York, E. P. Dutton & Co., 1922, p. 6.

¹⁰ Ibid., p. 6.

[&]quot; Ibid., p. 6.

n Ibid., p. 6.

³³ Parkhurst, Helen. An Explanation of the Dalton Laboratory Plan. London, England, Dalton Association, 1926, pp. 7, 8.

which he must attend. Such conferences are always called when a small group of pupils have arrived at certain predetermined "instruction points" or when new work is to be assigned. He looks for announcements of "grade conferences" of pupils of his own grade or of other grades. grade conference may affect his plans because a certain subject-matter laboratory will be closed while the grade is holding its meeting. Therefore, in spite of a superficial appearance of triviality the peculiar use of the bulletin board in a Dalton school creates an important criterion for determining whether a given school is using the Dalton plan.

Planning the day's work.—Each pupil plans his day's work during "organization time," a period of about 15 minutes during which the pupils of each "house" meet with the "house teacher." During this period each pupil discusses his job with the teacher or with the other pupils. Out of these discussions each pupil develops a plan for the best use of his day.

The morning session.—When "organization time" is over, the pupils go to the various subject-matter laboratories.24 During the greater part of the forestoon each pupil freely follows his plan. The morning session closes with a "conference time." 25 At this time all the pupils in each grade assemble with one of the subject-matter specialists to talk over a definite section of their "job." "Conference time" is allotted to teachers of different subject-matter fields on successive days. That is, the conferences may deal with English on Monday, with mathematics on Tuesday, with some other subject-matter field on Wednesday, and so on for the remainder of the week.

The afternoon session.—The afternoon session of the Dalton school is given over to scheduled periods for such activities as music, art, physical education, industrial and household arta.26

Tests and examinations. - Other criteria tending to distinguish the Dalton plan from other methods of school procedure

n Ibid., p. 6.

н Ibid., р. 7.

[&]quot; Mimsographed sheets distributed by Miss Parkhurst to her students at the Ohio State University, summer session of 1928.

deal with the measurement and with the recording of the pupil's progress. The place of tests and examinations in the Dalton plan is somewhat open to question. Miss Parkhurst doubts that examinations supply any real test of a pupil's knowledge or ability." However, comprehensive written examinations are given in the Dalton school at the end of each month, that is, at the completion of each "job," and one of the graphs for recording the pupils' progress is provided with a space wherein the results of the tests may be entered. Hence, periodical tests and examinations may be regarded as a part of the program of a Dalton school. Undoubtedly there is also much subjective testing based upon the teacher's observations of the pupil's daily work, as in any good school.

The instructor's laboratory graph.—The Dalton school uses three kinds of graphs to indicate the pupil's progress. The first of these is the instructor's laboratory graph. This graph is essentially a double-entry sheet with the names of the pupils of a given grade arranged in a vertical column at the extreme left. Twenty other vertical columns are headed from 1 to 20 to stand for the 20 units of work in a month's assignment in one subject-matter field. The pupil's progress in a given subject is indicated by a straight line drawn to the right of the pupil's name, each cross-section space which the line crosses indicating one "unit" of work which has been completed. The laboratory graph is posted on the wall of the laboratory in a Dalton school and each pupil records his own progress upon it each day before leaving the laboratory.

The pupil's contract graph.—The second of these graphs is the pupil's contract graph.²⁰ This graph is divided by horizontal lines into 20 equal intervals, one for each "unit" of the month's work in all subjects. Vertical columns are provided, each of which may be headed with one of the subjects which the pupil is carrying. Thus, each vertical column is divided into 20 equal intervals each of which represents a "unit" of work in the given subject. Using the same prin-

¹⁷ Parkhurst, Helen. Education on the Dalton plan. New York, Ε. P. Dutten & Co., 1922, p. 140.

²⁵ Thid., p. 187.

[&]quot; Ibid., p. 143.

ciple referred to in the description of the laboratory graph, the pupil may indicate the number of "units" which he has completed in any given subject by drawing a straight vertical line of the proper length in the appropriate column.

The house graph.—The third graph used in the Dalton school is the house graph.³⁰ This graph lists the names of the pupils of the "house" in a vertical column at the extreme left of the card. The pupils' work in all subjects combined may be charted on this graph for one week. Each week a new graph is used and the graph for the preceding week is filed. Forty vertical columns are provided. A straight horizontal line drawn to the right of a pupil's name indicates the total number of "units" of work which the pupil has completed in all his subjects at any time during the school week.

Criteria summarized.—The preceding sketch has been an attempt to demonstrate that definite and objective criteria are available for determining the extent to which the practices of any school approximate the practices of the Dalton school. These criteria may be summarized under the following seven heads:

- 1. Extent of the plan within the school-
 - (a) The plan influences the presentation of offerings in all subject-matter fields.
- 2. The "house"-
 - (a) The school is organized into houses.
- 3. The "laboratory"-
 - (a) Classrooms have been transformed into subject-matter laboratories.
 - (b) "Laboratories" have been provided with certain essential equipment.
- 4. The "bulletin board"-
 - (a) The bulletin board is the chief medium of announcements affecting the pupil's plans for the day.
 - (b) The pupil reads the bulletin board and takes notes preparatory to planning each day's work.
- 5. The daily time schedule-
 - (a) The traditional daily schedule of classes has been abandoned.
 - (b) An "organization time" is scheduled daily.
 - (c) The pupil freely follows his plan during most of the morning session.

[&]quot; Ibid., p. 147.

- The daily time schedule—Continued.
 - (d) A "conference time" is scheduled at the end of each morning session.
 - (e) The afternoon session is given over to scheduled periods for such subjects as music, art, physical education, industrial and household arts.
- The assignment—
 - (a) The pupil's "job" is defined as his assignments in all subjects for one month.
 - (b) The "job" usually consists of problems to be solved.
 - (c) The "job" is presented to the pupil in the form of a mimeographed "job book."
 - (d) The pupil must finish all parts of his "job" before being
 - permitted to take up the next "job."

 (e) The "allotment" or "contract" is a month's assignment in one subject.
 - (f) The "unit" is one day's work in a subject.
- 7. Pupil progress.
 - (a) Pupil progress is measured by examinations following each job.
 - (b) Pupil progress is recorded by means of (1) laboratory graphs, (2) pupil's contract graphs, and (3) house graphs.

5. PRACTICES OF SELECTED SCHOOLS USING THE DALTON PLAN

The closest existing approximation to the Dalton plan.—The method of selecting this group of schools for intensive study has already been described. The practices of this selected group of schools probably approximate the Dalton plan more closely than the practices of any other schools excepting only the Children's University School, New York City. Under these circumstances the following facts are interesting and highly significant.

Size of schools studied.—The schools operating under the term "Dalton plan" are typically small. Twenty-two have enrollments of fewer than 500 and 13 have enrollments of fewer than 250. All enrollment groups are represented, 10 schools having enrollments of more than 500 and 5 of these having enrollments of more than 1,000.

Type of organization.—Most of these schools are of the reorganized type. The typical school includes grades 7 to 12. Only six unreorganized schools are represented. The group of schools studied includes six schools which have been influenced by the reorganization movement but with atypical grade combinations due to the necessity of meeting purely local conditions.

Number of years the plan has been used.—The plan is of recent origin in these schools. Sixteen report it to have been in use two years or less. Eleven have used the plan from three to four years and 5 have used it five years or more. The maximum period of use in any school is eight years.

Attitudes toward the plan.—The practices under way in these schools are reported to be accepted with favor by pupils, community, faculty, and administration. Pupils in no instance are regarded as unfavorable. In several instances the community is reported as neutral. These respondents are unanimous in their belief that pupils are far better motivated under the so-called Dalton plan than under the traditional classroom plan.

Length of school day.—The typical length of the school day is 360 minutes, the range being 285 to 435 minutes.

Subjects presented by means of the so-called Dalton plan.—
The extent to which the offerings of the various subjectmatter fields are presented by means of the plan ranges from
a little more than a third in music to nearly three-fourths in
the social studies. (Fig. 2.) The median for all subjectmatter fields is 55 per cent. In a few schools nearly all subjects are influenced by the plan. In the South Philadelphia
High School for Girls, music is the only subject not influenced by the plan. This school most nearly measures up
to the first criterion, namely, that the plan should influence
the presentation of offerings in all subject-matter fields. Yet
South Philadelphia does not claim to have an orthodox
Dalton plan in operation, but is one of the schools which
reported a modified Dalton plan.

The "house."—Two of the 32 schools are organized into "houses" in the Dalton sense of the term. One school includes grades 7 to 12, the other grades 7 to 9. South Philadelphia High School for Girls is not so organized.

The "laboratory."—In 22 of the 32 schools one or more subject laboratories in each subject are maintained. The extent to which these laboratories function as true laboratories in the Dalton sense is dependent in part upon the extent to which the fixed schedule has been abandoned and

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free budgeting of time is provided for. In 10 schools some laboratories are used for more than one subject. In seven of the larger schools separate subject laboratories are provided for the pupils of each grade. Twenty schools report movable tables and chairs and an ample library of reference books in each laboratory. Sixteen report all necessary equipment and apparatus. Only seven have file cases for

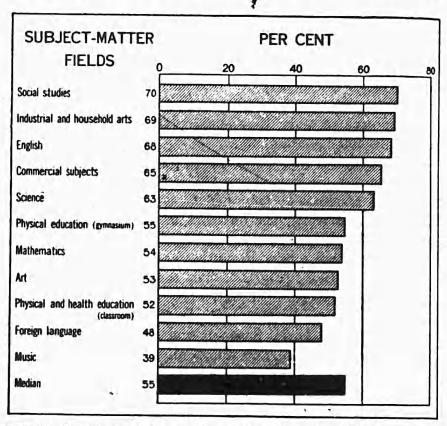


FIGURE 2.—Percentage of offerings in each subject-matter field presented by means of the Dalton plan

pupils' written work, tests, records, and other materials. Only four schools report all four items, namely, (1) movable tables and chairs, (2) ample library of reference books, (3) all necessary equipment and apparatus, and (4) filing devices. Nine schools report the first three items. Hence, only a very few respondents in this group have succeeded in transforming their classrooms into efficient laboratories.

The bulletin board.—The bulletin board is not the chief medium of announcements affecting the pupils' plans for the day in any of these schools. In South Philadelphia High School for Girls, which most closely approximates a Dalton school in this and in many other respects, the following items are announced by means of the bulletin board: Presentation periods or group conferences; grade or class conferences; and individual conferences of the pupil with the teacher. However, much of this information is carried on the teachers' bulletin boards rather than on the general bulletin board of the school, and the guide-sheets also carry many announcements which affect the pupil's work plans for the day. Only in South Philadelphia High School for Girls do the pupils read the bulletin board each morning and take notes essential to planning the day's work. This suggests that the remaining 31 schools are retaining the traditional daily schedule.

The daily time schedule.—As a matter of fact, South Philadelphia High School for Girls is the only school in which the fixed daily schedule has been abandoned to an extent which permits considerable free budgeting of time. One other school reports that pupils are allowed to budget their time. In this latter school, however, a bell sounds at intervals of 45 minutes and pupils are requested to transfer from one room to another at the sound of the bell or to remain where they are during the ensuing interval of 45 minutes. This procedure is followed for the purpose of "concentrating corridor traffic and insuring less interruption." It is a serious compromise with the fixed schedule if not essentially a return to it. In a third school an attempt was made to abandon the fixed schedule, but after a semester's experience with permitting pupils to budget their time the fixed schedule was restored. In the South Philadelphia High School for Girls the pupil budgets about a half of her time. Fixed periods are provided for assemblies, luncheon, gymnasium, chorus, art, home economics, and student government. These scheduled activities are typical of the activities to which the afternoon session of the regular Dalton school is given. Such an afternoon schedule in South Philadelphia is impossible since the school operates in two shifts, one group of

pupils coming at 9 a. m. and leaving at 2.30 p. m., the other group coming at 11 a. m. and leaving at 4.30 p. m. Further limitations upon the pupil's free budgeting of time in South Philadelphia are: (1) The pupils of grade 9-A, or the firstterm pupils, are allowed no free budgeting of time. Many will regard this as a desirable exception, since the entering pupils come from many different schools and the idea of budgeting their own time is entirely new to them. (2) The pupils of the "extension group," a group of low-ability pupils, 31 are not permitted to budget any portion of their (3) Any pupil may lose her privilege to budget her time if she willfully wastes time when working under the plan. Such pupils are placed upon a fixed schedule and their compliance with the schedule is carefully checked. During the second semester of 1929-30 about 200 pupils, or 1 per cent of the total enrollment were placed upon fixed schedule. However, the principal, Dr. Lucy L. W. Wilson, reports that none of these was retained on fixed schedule for an entire year, and not more than a dozen were retained for the entire term. A noteworthy extension of the principle of free budgeting of time is made in South Philadelphia for those students who compose the "Honors Group." 33 This group consists of about 10 per cent of the juniors and seniors. The group is allowed complete freedom of the school, even with respect to attendance upon scheduled activities.

Checking attendance.—The question of checking the attendance of pupils is frequently raised in discussions of the advisability of abandoning any portion of the fixed schedule. Obviously if a pupil is to be given real freedom to budget his time or to plan his day's work then no rigid and constant check upon his attendance throughout the day can be made. Even if he leaves the organization room in the morning with a definite schedule of the amount of time to be given to each subject during the day, the principle of free budgeting would imply his right to change that schedule if circumstances seemed to warrant it. For example, the work in history which he thought would take only one-half an hour proved to require an hour. Such incidents are certain to occur and to

[&]quot; See sec. 9, Ch. VII, Pt. I.

^{*} See sec. 7, Ch. VII, Pt. L.

necessitate a revamping of the tentative schedule for the day's work. Since South Philadelphia High School for Girls is the only school in this group which allows real budgeting of time, Doctor Wilson's answer to the question, "How do you secure a continuous record of each pupil's attendance throughout the school day?" is significant. She replies, "We do not secure it!"

Provisions for laggards.—In South Philadelphia pupils who do not work successfully under a plan of free budgeting of time are placed on fixed schedule and supervised daily. With pupils falling behind in the other schools various remedial measures are employed. The pupil's study-hall activities are analyzed and suggestions are made for a better use of his time; he is required to make up work outside the regular school hours; he is coached in special individual or small group conferences; or his program of allied activities is restricted.

Home study.—In the Dalton school home study has been tabooed on the theory that all study should proceed under the expert direction of the teacher. This position is hardly tenable when applied to the secondary school where pupils become capable of increasing self-direction. Twenty-nine of the thirty-two respondents expect that some time will be given by each pupil to home study. The typical amount is five and one-half hours per week. More home study is expected from pupils in the upper grades, the ratio of amounts of time for grades 7 and 12 being 1 to 2.

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The assignment.—In 11 schools the term "job" is used to apply to the assignments for a definite period of time in all subjects elected by or required of the pupil. This definite period is coextensive with the marking period of the school, which seems a reasonable approximation to the Dalton plan, wherein the "job" consists of integrated assignments in several subjects planned to occupy the average pupil's time for one month. In all, the pupil's work for the year is divided into "jobs" in 23 schools. However, in 12 of these schools the job is regarded as having no definite, quantitative meaning. Moreover, the "job" is regarded as a subdivision of one subject, not as an integration of the assign-

ments in all subjects which the pupil is carrying. Hence, in these 32 schools, as a group, the term "job" has no fixed definition as in the Dalton school. Typical statements on this point are: "The individual teacher decides the amount of time which the average pupil shall give to a job." "The time varies according to the subject matter, its difficulty, and its importance." Also, the terms "allotment and contract" as used in these schools have no uniform meaning.

Correlation of assignments.—One of the most distinctive features of the Dalton school is the integration of the pupil's work in the various subject-matter fields if the "job" is properly built. To secure this integration the Dalton school resorts to a simple but effective procedure. Each teacher builds the contracts or assignments for her subject. Next, each group of teachers having the same pupils in their classes hold conferences during which all assignments are revised with a view to correlation and integration. By means of "departmental cuts" many repetitious tasks are removed from the "job." For example, a theme prepared as a part of the history assignment may also be submitted to the English teacher to meet certain of her requirements. Obviously, the idea of "departmental cuts" has wide application to all subject-matter fields. Freed from unnecessary and overlapping effort, the pupil finds that his range of worthy activities has been increased or that a margin of time has been allowed for that refinement of effort which enters into all truly creative work. In 11 of the schools being studied procedures are being used which should secure the same desirable results. Typically, however, each teacher in this group of schools works out her own assignments independently and submits them for the approval of the principal or the department head. In some of the schools not even this approval is required. In other schools the contracts or assignments in a given subject are developed by a special committee of teachers in the given subject-matter field. The assignments are then used by all teachers of the subject in the. county or city district. This method undoubtedly results in better assignments than would be developed ordinarily by the individual teacher working independently. However,

it probably fails to secure any high degree of correlation or integration. Some respondents frankly state that they are not securing the desired degree of correlation of the various subject-matter fields. One school reports a method for securing correlation which might supplement or at times replace the staff meetings just mentioned. The method consists of supplying each teacher with copies of the guide sheets which teachers in the other subject-matter fields have developed for her pupils. Careful study of these sheets enables the teacher to improve her own guide sheets from the standpoint of integration and correlation and to make suggestions to other teachers for improving theirs.

A feature related to correlation.—Under the Dalton plan the pupil is required to finish all parts of one "job" before taking up the next. That is, the pupil must finish the month's assignments in all subjects before he may take up the next month's assignment in any subject. This simple requirement has far-reaching consequences. Suppose the assignments in English, social studies, mathematics, industrial arts, and foreign language, for a given group of pupils, have been carefully integrated for each "job." The careful planning would be of no particular service to a pupil who was working, for example, on the first "job" in English, on the second in social studies, on the third in mathematics, on the fourth in industrial arts, and on the fifth in foreign language. Yet analogous situations would be prevalent if some restriction were not placed upon the pupils. Due to different degrees of interest or to different capacities or aptitudes in the several subject-matter fields, any pupil might soon be distributing his time through several "jobs." Despite the importance of this restriction the evidence from the schools which are operating under the term "Dalton plan" shows that no similar requirement is being made. Of course, in the first place, in many of the schools the work is not being planned in "jobs" at all. Yet, in those wherein the work is planned after the fashion of the "job" the pupil is not required to finish all the assignments of one "job" before he takes up the next. Even in the South Philadelphia High School for Girls, which resembles the Dalton school more

than any of the other schools being studied, the term "job" is not used at all. Instead, the term "unit" is used in the sense of a natural, meaningful subdivision of subject-matter with no regard to the time element required for mastery. The pupil's work in each subject proceeds in a manner practically independent of her progress in her other subjects.

Meaning of "unit," "assignment," and "contract."—There is no semblance of uniformity in these schools in the use of the terms "unit," "assignment," or "contract." In a few schools the term "unit" is used in the true Dalton sense meaning one day's assignment in a subject. In some schools the unit is a logical or natural division of subject matter. The terms assignment and contract are frequently synonymous. Few respondents define unit, contract, or assignment in chronological terms. Typical comments on this point are: "The individual teacher decides the length of time to be given to the assignment." "The subject matter is divided into real units without regard to time requirements." "Assignments vary in number according to the nature and importance of the material." "Units are variable according to the nature of the subject matter."

Assignments in problem form.—Twenty-three schools report an endeavor to present the "job" to the pupil in the form of problems. Nine schools report that problems compose about a half of the "job." As a rule the "job" does not consist of a fixed number of problems.

Guide sheets.—In 29 schools the assignments are presented to the pupils in the form of mimeographed guide sheets. In two schools these sheets are bound into a booklet comparable to the "job book." As a rule the guide sheets for a given unit contain: Directions for study, references for reading, a list of supplementary projects, and an outline of the minimum essentials. In one school the supplementary projects are frequently listed on the bulletin board. In another school the supplementary projects are card-indexed on 4 by 6 inch cards. Other items placed on the guide sheets in one or more schools are: Materials for the motivation of pupil activities (which suggests Miss Parkhurst's phrase "interest pockets"); tests for gauging results; and questions to aid the pupil in the search for data.

Use of a basal text.—In 30 schools a basal text is followed in building assignments. In most of these supplementary texts are also considered.

Revision of assignments.—Half the schools report the revision of assignments to be a continuous process. In the other schools revision is made at the end of each semester or each year.

Differentiation of assignments for different ability levels.— Twenty schools report the assignment to be built to provide for different ability levels. The typical number of levels recognized is three, with the range from two to five. South Philadelphia recognizes five levels by means of separate guide sheets. One school reports that no separate series of units is provided for each ability level but that adaptations to individual needs are secured through individual conferences. In 21 schools the pupil is allowed considerable choice of topics, references, and problems within the assignment, for both the average and the highest levels. Several add that this is not always or necessarily done. Where differentiated assignments are provided the pupil usually begins with the problems or units for the lowest ability level and advances through the assignments for the higher levels as far as he can. In four schools the pupil is assigned to the series of units corresponding to his ability determined either on the basis of teacher's judgment or on the basis of mentaltest results. In two schools the pupil is given the doubtful privilege of choosing the series with which he is to begin. Differentiated assignments for different ability levels show two types of variation. Slow pupils are given quantitatively less to do and are assigned work which is qualitatively less difficult, requiring less intelligence. Bright pupils are given quantitatively more work to do and work is assigned which challenges high intelligence.

Predetermined "instruction points."—In 21 schools the assignments are planned with certain predetermined "instruction points" in view. The teacher calls group conferences of pupils who simultaneously reach these points. One school reports an experiment with additional group conferences suggested by the pupils themselves when they feel a common need for instruction. In only 15 schools are these small

group conferences called on the basis of pupil-progress as recorded on the laboratory graph.

Tests.—Pre-tests are given infrequently in these schools. Some kind of test is always given at the end of the assignment. Twenty-two respondents use the objective or newtype test of mastery exclusively; 10 use both objective and subjective or essay tests; and 17 supplement objective or subjective tests with oral tests. In one school a theme summarizing the assignment or unit is frequently required.

Recording pupil progress.—Graph cards on which the pupil may keep a record of his progress in the various subjects are provided in only 10 schools. One principal says: "We do not manage this graph card very well; it is little more than a report card." Only 8 schools report the use of a laboratory graph in each subject-laboratory on which each pupil's progress in the given subject is graphed. One school reports that the laboratory graph is not much used because of the necessity of housing 75 teachers in 40 rooms. Only 5 schools report the use of a "house" graph upon which is recorded the total progress in all subjects of each pupil belonging to the "house."

Marking.—No unusual departures from prevailing methods of marking are found in these schools. The 5-point letter system, either with or without percentage equivalents, predominates. Ten schools report the use of the percentage system. Other marking systems represented are: The 6-point letter system, the 4-point letter system, and letters with plus and minus signs.

Promotion.—The respondents usually require the completion of at least the contracts or assignments of the minimum level for promotion. Enrichment rather than acceleration, a broad scholarship rather than a reduction of time spent in school, is the aim frequently expressed.

Reports to parents.—Reports to parents are sent out at intervals of from 4 to 12 weeks. Eighteen schools send out reports each 6 weeks. The typical report card carries the following information: A mark indicating the quality of the pupil's performance in each subject; a mark in industry; marks or ratings in deportment or character traits; and a

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record of attendance. Sometimes various items concerning health and the pupil's rank in class also appear on the card.

6. CONCLUSIONS

The facts have shown that among the 32 highly selected schools included in the study, only one reveals in its practices any considerable number of the features and procedures of the orthodox Dalton school. All of these schools have been influenced to some extent by the Dalton plan. However, they have been influenced to a far greater extent by that larger movement in education, of which the Dalton plan is a part, namely, the movement to provide for the pupil definite assignments of integrated work adapted to his individual needs, interests, and abilities, to be mastered by him under classroom conditions which allow the greatest possible freedom consistent with wise direction.

The facts have also suggested that the fundamental principles which are thought to differentiate the Dalton school from other schools really function in all good schools. For example, a vast amount of interaction of group life goes on in any school, first because pupils are thrown together in widely varying combinations from one classroom to another in the academic and the nonacademic subject-matter fields; and second, because the pupils arrange themselves in the extracurriculum in groups which are much different from the groups in which they find themselves in the work of the regular curriculum. As for the budgeting of time there probably never was a school where this did not go on to some extent. In the typical secondary schools of to-day it is subject to much greater encouragement than ordinarily obtains. Every pupil has study periods and out-of-school time which should be budgeted to the various subjects which he is carrying; and the practice of permitting the pupil to give time scheduled for one subject to another subject is becoming increasingly frequent. In short, the orthodox Dalton school does not differ from other excellent schools in fundamental principles but rather in its many features of organization and procedure which are intended to secure the more effective functioning of those principles. In these many features of organization and procedure the orthodox Dalton school differs

radically from all of the selected schools included in this intensive study.

In some cases the staffs of these schools are keenly aware of the significance of these differences. One respondent might well speak for the whole group of schools when he says: "I prefer to call our practices a unit system of individual instruction rather than the Dalton plan."

CHAPTER IV: THE WINNETKA TECHNIQUE

1. INTRODUCTION

Washburne's collaboration with Burk.—More than 20 years ago Frederic L. Burk, then president of the San Francisco State Normal College, initiated a form of individualized instruction ¹ for the pupils of the elementary training school. One member of the faculty collaborating with Burk in this early venture was Carleton W. Washburne, now superintendent of schools at Winnetka, Ill. Washburne has made it very clear that the individualization of instruction which has gone forward in Winnetka during these intervening years is an extension or evolution of the ideas and procedures developed earlier in San Francisco. Therefore, a brief résumé of Burk's pioneer labors should form a fitting introduction to a consideration of the Winnetka technique.

Burk's "exercise books."—In 1913, Burk issued a progress report of the experiments which he and his colleagues were conducting in the field of individualized instruction.³ One procedure stressed in this report was the substitution of "exercise books," constructed by the faculty, for the traditional texts. These "exercise books" contained the essential materials for individualizing instruction. At the time of the report such materials had been prepared in arithmetic, language, grammar, writing, primary reading, formal geography, and to some extent in history. Burk emphasized that these materials were not being regarded as finally formed but were constantly subject to change in the light of new experience. Unquestionably the "exercise book" is the progenitor of the "assignment booklet" to be

As early as 1888 under the direction of Supt. Preston Search a form of individualised instruction was in use in Pueblo, Colo.

¹ Washburne, Carleton W. Burk's Individual System as Developed at Winnetks. In Twenty-fourth Yearbook, National Society for the Study of Education, Pt. II (1925), p. 78.
¹ Burk, Frederic L. Lock-step Schooling and a Remedy, Monograph Series A, State Normal School, San Francisco, Superintendent of State Printing, Sacramento, Calif., 1913.
⁴ Ibid., p. 15.

mentioned later in connection with individualized instruction in Winnetka.

Burk laid down the following principles for the construction of exercise books: 5

- 1. Abstract explanations should be replaced by explanations in simple language.
 - 2. Each lesson should contain only one new thing to be learned.
- 3. Lessons should be elastic in length. There should be duplicate exercises and more of them than most pupils will need to work.
- 4. Tests should be inserted in the exercises at extremely short intervals to make possible frequent and automatic reviews. Each test should be followed by corrective exercises. Those pupils who make no errors on the test should omit the corrective exercises.

Standards established for a year's work in a subject.—The materials for each subject and grade were planned to cover the amount of work which the slowest pupil reasonably might be expected to master in one year, allowing some time for absences. This idea in modified form obviously inheres in a similar standard established in Winnetka whereby the materials for each subject and grade are determined by the amount of work which a normal, industrious, pupil of intelligence quotient 95 or higher can do.

Some advantages of the method as seen by Burk.—In the first place, individualized instruction broke up the "lockstep." Each pupil could advance at his own rate and each pupil mastered the work as he advanced. Needless to say this mastery concept to-day is an important phase of most plans for individualizing instruction. Since each pupil mastered his work as he advanced there were no failures. Since there were no failures no pupil ever repeated a grade. Each pupil was promoted whenever he had mastered the materials for a given grade and subject. The method required each pupil to master all of the assigned work instead of only a part of it as so frequently happens under the traditional recitation. Under the method of individual instruction a heightened interest prevailed. Pupils engaged in their study during the individual-work period with an earnestness and absorption never displayed in the traditional classroom.

⁴ Ibid., pp. 15-18.

⁶ Ibid., p. 15.

⁷ Ibid., p. 17.

Moreover, the increase in the amount of directed study resulting from methods of individual instruction removed the necessity for undirected study at home.

Class work not entirely individual.—Class discussion was not eliminated. On the contrary, a regular program of brief class discussions interspersed the longer periods of individual work. Burk believed that these periods of class discussion should occur "when the progress of a group of pupils has passed beyond some epoch of history, some geographical area, some problem of modern industry, or other complete topic in any field." Two comments are ventured. First, Burk's concept is here analogous to Miss Parkhurst's concept of "predetermined instruction points" as practiced under the Dalton plan. Second, his concept is considerably different from the present idea back of the practice in the "knowledges and skills" subjects in Winnetka.

Burk's place in the broad movement for individual instruction.—Burk must be regarded as one of the pioneers in a broad movement which has gained increasing momentum during the quarter of a century just passed and which now appears sufficiently powerful to remove the lock-step permanently from the ranks of accepted techniques of classroom procedure. Burk's attitude concerning his relation to this movement establishes an important precedent and is best expressed in his own words. "We would present what we have done as a suggestion. We do not in any sense present these outlines as finished. We do not believe that the method is the only solution or remedy for the evils of the lock-step. Nor is it our concern to establish the particular form of substitute our experience has built up.10 But we are concerned that some efficient system should replace the existing inefficient system, be it ours or any other that may be devised." 11

8. PRACTICES IN WINNETKA

The reorganized curriculum.—At Winnetka, Ill., Washburne has advanced upon the theory that the first step in individualizing a school is the reorganization of the curricu-

[!] Ibid., p. 22. ! Ibid., p. 21 !! Italies not Burk' !! Ibid., p. 14:

lum.12 By this reorganization the curriculum is divided into two parts. The first part, known as the "common essentials," consists of knowledges and skills which have been definitely stated and which are needed by all children. second part consists of what Washburne terms at various times as group, socialized, self-expressive, or creative activities. Obviously these terms overlap. Creative activities may be group or individual. A similar statement holds for self-expressive activities. Yet, perhaps, all four terms are needed at one time or another to describe various phases of

this second part of the reorganized curriculum.

Work on the common essentials is completely individualized .-The pupil's work on the common essentials, or the knowledges and skills, is completely individualized. There is no semblance of compromise with group activity. In this work lectures and recitations have been abandoned entirely in favor of self-instructive practice exercises, which enable the pupil to attain a definite goal, and diagnostic tests which either reveal that the goal has been attained or indicate further necessary practice.13 The individual pupil works on each goal or unit until he has mastered it, and no longer. Several series of practice exercises are provided for each goal to be attained.14 Diagnostic practice tests are also provided in several equivalent forms for each goal. If the pupil passes the first practice test he proceeds to the next unit. If he fails, the scoring of the test automatically indicates the additional practice which is needed. After a second period of practice the pupil takes a second test on the unit and so on until the unit is mastered.

The "assignment booklet."—The preceding statements have indicated that each knowledges or skills subject is first divided into steps, goals, or units.15 Next, material must be prepared which will enable the pupil to instruct himself on the unit. If ordinary textbooks are to be used they must be supplemented with mimeographed assignment sheets, supplementary expla-

¹³ Washburns, Carleton W. A Program for Individualization. The Twenty-fourth Yearbook, National Society for the Study of Education, Pt. II, 1925, pp. 268-200.

¹³ Washburne, Carleton W. Winnetka. School and Society, 29: 23, January 12, 1929.

¹⁴ Ibid., pp. 11-12.

¹⁶ Washburne, Carleton W. A Program for Individualisation. The Twenty-fourth Yearbook, National Society for the Study of Education, Pt. II, 1926, p. 260.

nations, and practice materials. These are bound together in what are termed "assignment booklets." Washburne says that before writing an assignment booklet the teacher first should state the specific objectives—that is, the goals or units of the subject—and second, should prepare complete diagnostic tests to show whether the child has reached the objectives. The complete assignment booklet should contain (1) a statement to the child of what he is to try to get from the text—that is, the goals or objectives; (2) essential materials not given in the text, such as explanations and additional practice work and exercises; (3) separate sets of exercises for each objective; and (4) a set of answers to all exercises for self-correction.

The mastery tests.—In addition to a series of diagnostic practice tests, a series of diagnostic mastery tests should be prepared covering each unit of work. The practice tests and mastery tests are really equivalent and interchangeable The practice test, however, is administered and scored by the pupil himself, while the mastery test is administered and scored by the teacher. The pupil does not apply for the mastery test until he has convinced himself by means of practice tests that he has mastered the unit. Four facts concerning the mastery test should be emphasized. First, the test is diagnostic.19 It must show not only whether mastery has been attained, but if mastery has not been attained it must show just what the pupil's weaknesses are and what additional work the pupil should do. Second, each test should be made in several equivalent forms. The use of but one form is likely to lead to attempts at memorizing the Third, only multiple response and completion tests are regarded by Washburne as satisfactory tests of mastery." Fourth, the purpose of the mastery test is to discover exactly what help each child needs and not to assign him a mark. 22

¹⁶ Ibid., pp. 250-260

¹⁷ Ibid., p. 200.

u Ibid.

[&]quot; Washburns, Carlston W. Winnette. School and Society, 20:28, January 12, 1929.

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³¹ Washburze, Carleton W. A Program for Individualization. The Twenty-fourth Year-book, National Society for the Study of Education, Pt. II, 1925, p. 260.

[&]quot; Washburns, Carlston W. Winnetka. School and Society, 29:12, January 12, 1939.

The group, socialized, self-expressive, or creative activities.—
The nature of the group, socialized, self-expressive, or creative activities is indicated by the following quotation:

These group and creative activities are frequently centered around the children's work in social science or literature. They also include, however, appreciation of music, art, and literature, self-governing assemblies, playground activities, shopwork, the writing, editing, illustrating, and printing of a self-supporting school newspaper, and a wide variety of other means for stimulating creative work on the part of the child and for developing in him a social consciousness.

This statement suggests that excellent secondary schools are already accomplishing in their own way what Washburn is accomplishing through his reorganized curriculum. is being done in three ways. First, the extracurriculum of many modern schools is meeting the pupil's needs for group, socialized, self-expressive, or creative activity in a truly satisfying manner. Second, many of the elective subjects are meeting these same needs for special groups of pupils, as, for example, in shopwork, art, or music. And third, even in the required subjects tangential problems and projects which have their origin in the regular assignments in the subject are providing avenues for self-expression and creative activity for the very capable pupils, as well as many opportunities to all pupils for group and socialized work. However, Washburne contends that if the knowledges and skills subjects were completely individualized they could be mastered in much less time than is now given to them and more time would be available for the group, socialized, self-expressive, and creative activities.

Correlation of subjects under the Winnetka technique.—Each pupil may advance in the various knowledges and skills subjects at widely varying rates. There are no requirements, as in the Dalton plan, that assignments be mastered in all subjects for a given period of time before a new assignment in any one subject is taken up. This fact prevents a planned correlation either among the various phases of the common essentials or between the common essentials and the group, socialized, self-expressive, or creative activities. Washburne definitely states that no effort is made to correlate the social-

[#] Ibid., p. 34.

ized and the individualized work. Such correlation as exists is incidental. Perhaps at no other point do the practices at Winnetka differ more diametrically from the practices of a Dalton school. Further consideration of the reorganized curriculum must be waived in order that other salient characteristics of the Winnetka frocedure may be mentioned.

Homogeneous grouping.—Homogeneous grouping on the basis of social age is a phase of the Winnetka procedure. Such grouping brings pupils together who can best associate in the group, socialized, self-expressive, or creative activities. Probably the extension of this idea to the secondary school with its departmentalized organization would be attended with numerous difficulties.

Budgeting of time.—In Winnetka some pupils are classed as self-reliant, others as supervised. Supervised pupils must get special permission from the teacher to deviate from the daily program. Self-reliant pupils budget their time as is done under the Dalton plan. The one exception to this rule is that self-reliant pupils must be present at discussions in social science unless excused in advance.²⁵

The teacher's class record.—The purpose of group accialized, self-expressive, or creative activities in Winnetka is never academic. No marks are awarded. Even in the knowledges and skills subjects the teacher's class record carries only the date when the pupil mastered each goal or unit. The class record lists the tests of any given subject across the top of the page and the children's names down the side of the page. The date when a given pupil passes a given test is written in the appropriate cross-section space.

The pupil's "goal card."—The pupil receives a "goal card." The card carries a series of parallel columns, one for each subject. Spaces are provided for entering the date when each goal was mastered. The back of the "goal card" provides a cross-section arrangement whereon the pupil's ratings on a 5-point scale in the following traits may be

M Ibid., p. 34.

[#] Ibid., pp. 11, 25.

³⁰ Ibid., p. 34.

[&]quot; Washburne, Carleton W. A Program for Individualization. The Twenty-fourth Year-book, National Society for the Study of Education, Pt. II, 1925, p. 261.

Washburne, Carleton W. Winnetka. School and Society, 29:28-30, Jan. 12, 1929.

graphed: Group spirit, self-reliance, initiative, work spirit, orderliness, and special interests and abilities. The ratings of these traits are made cooperatively by the teacher and the pupil through individual conferences.

Promotion.—Promotion is based on achievement in the knowledges and skills subjects. It is "individual, continuous, and by subjects." ?

Extending these procedures to the secondary school.—While Washburne has extended his technique only through the junior high school grades he has frequently expressed ideas concerning the extension of the technique through the senior high school. For example, he sees no reason why shopwork in the junior and senior high schools should require any special technique for individualization.30 To individualize highschool mathematics or grammar he sees the following necessary steps: Decide definitely what degree of skill is needed; prepare or select tests to determine when this skill has been achieved; make assignments to the necessary text material for the achievement of this skill.31 To individualize Latin prepare supplementary materials to accompany the texts. In developing these supplementary materials it will be necessary: To determine exactly what rules, vocabulary and translation ability are to be required; to break up these rarger objectives into smaller work units; to prepare tests to cover each of these units; to prepare assignment sheets to accompany the Latin text; and to prepare answer sheets by which the pupil can check the accuracy of his own prose composition or translation.32 Washburne suggests that analogous procedures may be used with English or social studies. general position with respect to individualizing the work of the senior high school may be summed up in the following quotation:

When the general plan of individualized work is inaugurated in any subject, supervised study and diagnostic tests will entirely replace the recitation in this subject. There will, consequently, be an immediate saving of time in the daily program. Much or all of this saved time

[&]quot; Told., p. 34.

Washburne, Carleton W. A Program for Individualization. Twenty-fourth Yearbook, National Society for the Study of Education, Pt. II, 1925, pp. 268-269.

n Thid., p. 268.

m 1bid., p. 269.

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should be used for socialized activities which may or may not be connected with the individualized subject. In the periods formerly used for recitations it is quite possible to introduce activities of an entirely different sort and for which the schools have not previously had time. Such activities may include dramatizations, discussions of current topics, self-governing assemblies, or various types of projects in which the pupils learn to cooperate one with another and in which they are given an opportunity for creative work and self-expression. To clear time for these group and creative activities is one of the main purposes of individual instruction.

Criteria for a comparative study.—The foregoing brief summary has been focused upon those characteristics which, in the opinion of the present writer, based upon a careful analysis of the literature, tend to differentiate educational practices in Winnetka from educational practices in other excellent schools. From this summary a set of fairly objective criteria are available. These criteria will be used in a comparative study aimed at discovering the extent to which the practices of a highly selected group of schools operating under the term "Winnetka technique" really are approximating the practices in Winnetka. To present the results of this comparative study is the primary purpose of this chapter. Apparently the following characteristics of practice in Winnetka should be considered as criteria for such a comparative study:

- The curriculum is reorganized into (1) knowledges and skills subjects and (2) group, socialized, self-expressive, or creative activities.
- 2. The work in the knowledges and skills subjects is completely individualised.
 - (a) Specific goals or objectives have been established in each subject.
 - (b) Several series of self-instructive practice exercises have been prepared for each objective.
 - (c) Several equivalent forms of a diagnostic practice test have been prepared for each objective. These are keyed to indicate automatically the further practice necessary in case mastery has not been attained.
 - (d) Several equivalent forms of a diagnostic mastery test have been prepared for each objective. These are essentially equivalent to the corresponding practice tests.

[#] Ibid., p. 270.

- 2. The work in the knowledges and skills subjects is completely individualized—Continued.
 - (e) "Assignment booklets" have been prepared to accompany texts not written for individual instruction.
 - (f) Reviews of previously mastered materials have been systematically planned.
 - (g) The amount of work assigned for a year is the amount which a normal industrious pupil of intelligence quotient 95 or above can do in the specified interval of time.
 - (h) The teachers' class records show the date on which each pupil demonstrated mastery of each objective.
 - (i) Promotion is based upon achievement in the knowledges and skills subjects.
 - (j) Report cards have been replaced with "goal cards."
- 3. The group, socialized, self-expressive, or creative activities.
 - (a) No academic standards have been established for them.
 - (b) They center around social science or literature or both.
- No definite correlation has been planned between the knowledges and skills subjects and the group, socialized, self-expressive, or creative activities.
- 5. Pupils are classed as self-reliant or supervised. Self-reliant pupils budget their time.
- 6. Homogeneous grouping on the basis of social age is practiced.

With these criteria in mind the writer will attempt to set forth as briefly as possible the actual practices of a small group of secondary schools selected because in all probability they are approximating these criteria more closely than any other secondary schools in the country, outside of Winnetka. The manner of selecting this small group of schools will be described and at the same time an overview will be given of the extent to which the Winnetka technique is being used in the secondary schools of the United States.

S. AN OVERVIEW

Schools using the technique and their geographical distribution.—The Winnetka technique was one of the 28 provisions for individual differences listed on the preliminary inquiry. The technique was reported on this preliminary inquiry form to be in use by only 119 schools, or about 1 per cent of the 8,594 schools whose replies were tabulated. Moreover, only 14 schools, or fewer than two schools in each 1,000 schools replying, were using the technique with estimated unusual success. The origin of the technique in the

^{*} See The Scope: A Preliminary View, p. 9.

elementary school and the fact that the public schools of Winnetka extend only through the first eight grades may account in part for the slow extension of the term to the work of the secondary-school grades. The 119 schools using the plan are distributed fairly evenly through 37 States. All geographical areas are represented, as is shown in Table 16. No State is represented by more than nine schools. The percentages of use and of use with estimated unusual success (based upon the number of schools replying from each State) are uniformly low for all States.

Table 16.—Geographical location of schools reporting on the preliminary inquiry the use of the Winnetka technique with and without estimated unusual success

Geographical area	U	80	Use with estimated unusual success	
	Number	Per cent	Number	Per cent
	2:	3	4	8
New England	8 17 19 58 17	1 1 1 2 1	1 5 5 3	
Total	119	1	14	*********

Schools classified according to total enrollment.—The technique is reported in use by schools of all sizes as is shown by Table 17. The percentages of use are somewhat higher in the larger schools. (Column 4, Table 17.) Three per cent of the schools with total enrollments of from 751 to 1,000 report the use of the procedure. None of these schools reports the use of the technique with unusual success. Less than a fourth of 1 per cent of the schools in any total-enrollment group estimates unusual success with the technique. (Column 6, Table 17.) However, if the number of schools using the method (Column 3) is made the base from which to calculate the percentages of schools which are using the method with estimated unusual success, then distinct differences appear in the degrees of estimated unusual success in the various total-enrollment groups (Column 7). For example,

about a fourth of the small schools, with total enrollments of 100 or fewer pupils, which are using the technique, express a considerable measure of confidence in its success. This fraction is distinctly larger than the comparable fraction for any other total-enrollment group. (Column 7.)

TABLE 17.—Schools using the Winnetka technique, classified according to total enrollment

Enrollment group	Number of schools	Schools using the technique		Schools using the technique with estimated unusual success		Column 5 divided by column
	reporting	Num- ber	Percent	Num- ber	Percent	3, per cent
1	2	3	4	5		7
50 or fewer 51 to 100 101 to 250 251 to 500 501 to 750 751 to 1,000		10 17 35 24 8 9	1 1 1 2 1 3 2	2 5 4 2 0 0	0 0 0 0 0	20 • 29 11 8 0 • 0
Total	8, 594	119	1	14	0	1

Schools classified according to type of organization.—Schools of all types of organization, excepting schools including grades 6 to 11, report some use of the Winnetka technique. (Table 18.)

TABLE 18.—Schools using the Winnetka technique classified according to type of organization

Type of organization	Number of schools reporting	Schools using the plan		Schools using the plan with estimated un- usual success		Column 5 divided by col-
		Num- ber	Percent	Num- ber	Per cent	umn 3, per cent
i	3		4			7
9 to 12. 7 to 12. 8 to 11. 7 to 9. 10 to 12. 6 to 11. All others 1.	4, 304 1, 284 638 614 308 105 1, 341	46 26 3 18 5 0 21	1 2 0 3 2 0	, 8 1 1 0 0	0 0 0 0 0 0 0 0	11 12 33 6 0 0
Total	8, 594	119	1	14	. 0	1

¹ Schools with atypical grade combinations.

Of the schools reporting the use of the technique a larger proportion are reorganized than unreorganized. (Column 4.) Only the merest fraction of one per cent of the schools of any type report the use of the technique with estimated unusual success. (Column 6.)

General impressions.—The preceding data lead to the following general impressions: First, the tendency to describe certain practices of the secondary school by the term Winnetka technique is slight but widespread, extending to every geographical area of the country. Second, a higher percentage of large schools than of small schools are using the term. However, a markedly higher percentage of small schools than of large schools are willing to express a considerable measure of confidence in the success of the practices which they are carrying on under the term. Third, there is a tendency for a larger proportion of the reorganized than of the unreorganized schools to use the term in describing certain of their practices; but percentages of estimated unusual success, based upon the number of schools of each type using the plan, suggest no differences between reorganized and unreorganized schools with respect to estimated success.

The data from an inquiry on individual differences sent out by the Office of Education in 1928, suggests somewhat similar impressions. This inquiry was addressed to a sampling so of high schools throughout the country. Of 1,872 replies which were tabulated, 128, or about 6 per cent, reported the use of the Winnetka technique. Both reorganized and unreorganized schools of all sizes were represented.

4 DETAILED PRACTICES IN SELECTED SCHOOLS

The follow-up inquiry form.—To learn in greater detail the nature of the practices included under the term Winnetka technique a 16-page, follow-up inquiry form was addressed to each of the 119 schools reporting the use of the technique. This form covered all items which were listed above as fairly objective criteria of the extent to which the practices of any school approximate the practices reported by Washburne at

[&]quot; See sec. 3, The Scope: A Preliminary View, p. 13.

Winnetka. The form also included many other items of probable importance or relationship.

Significant excerpts from letters.—Sixty-one schools replied to this inquiry. However, only 27 had filled out the form. Significant letters accompanied the forms which were returned blank. The following excerpts from typical letters accompanying these blank forms are illuminating:

- 1. We have studied the Winnetka technique in our teachers' meetings and we have analyzed sample assignments. Our teachers are making some use of the idea but not of the technique. We have studied other plans in the same way and have used such ideas as we have found helpful.
- 2. We are making a very informal experiment in the individualized study of spelling, which for want of a better term we have called the Win1 netka method. We have no materials other than what we plan ourselves and we are obliged to base our work on a city-wide list of words.
- 3. We have made use of a unit plan in two of our classes which has some of the element the Winnetka technique, but the rest of the school is organized on traditional plan. From a study of your inquiry form we find that our work is too different from the regular Winnetka technique to be of any value in furnishing statistics to you.
- 4. Our school has used the Winnetka technique of individualized instruction only in one or two subjects and in such a limited way that we can not answer your inquiry form.

Schools selected for detailed study.—So much for the forms returned blank. Even a casual inspection of the 27 inquiry forms which were returned filled out revealed that none described a school which closely approximated the prototype whose name it bore. Nevertheless, the nature and purpose of the present study justified the selection of a certain final group of schools to represent the nearest approximation to the Winnetka technique at all likely to be found anywhere among secondary schools outside of Winnetka. schools were included in this final group. These 11 schools represent 10 different States-4 in the West, 5 in the Middle West, 1 in New England, and 1 in the Middle Atlantic region. They represent all total-enrollment groups as follows: 100 or fewer pupils, 1; 101 to 250, 4; 251 to 500, 1; 501 to 1,000, 4; more than 1,000, 1. Eight of the eleven schools are reorganized, 6 including grades 7 to 12 and 2 including grades 7

[&]quot;The italics in this and the following quotations were not used by the writers of the letters.

to 9. The three remaining schools include grades 9 to 12, 7 to 8, and 7 to 10, respectively. The typical length of time during which these schools had been using what they called the Winnetka technique was two years. The range of use extended from one-half year to five years. The median length of the school day is 360 minutes with a range from 285 to 405 minutes. The median number of periods in the school day is six, and the median length of the period is 60 minutes.

Attitudes toward the technique being used.—The attitudes of pupils, faculty, and administration are reported as favorable or enthusiastic toward individual instruction, while the attitude of the community is usually neutral. Seven of the schools believe more pupils are motivated by true interest (defined as doing the work for its own sake because the pupil sees it as a self-adopted goal) in classes where the technique is being used than are so motivated in classes on the traditional classroom plan. However, one respondent adds that this is true only in mathematics, formal grammar, and other similar subjects, which in his opinion lend themselves to presentation by means of the Winnetka technique. Another respondent finds the technique to function in Latin but not in the conversational phases of modern foreign language. These reactions suggest that data should be presented at the outset to show to what extent the various subjects are being presented in these 11 schools by means of an individualized method styled the Winnetka technique.

Proportion of offerings presented by means of the technique.—
Omitting those nonacademic subjects which are ordinarily offered by highly individualized methods, the percentages of the total offerings presented by a so-called Winnetka technique are shown in Table 19 for the academic and commercial subject-matter fields. The unexpected fact is that of the total offerings of these 11 schools in all grades in any of the six subject-matter fields being studied, less than a third are being presented by means of what is termed the Winnetka technique. The range is from one-fifth in social studies to nearly a half in mathematics. English ranks second. Two other facts should be noted. First, social studies appear at the bottom of the list in percentage of offerings presented by means of the so-called Winnetka technique whereas it leads

the list in all other forms of individualization by means of the unit assignment.³⁷ Second, foreign language ranks near the bottom of the list, a place which it consistently occupies in the other studies of individualization reported in this monograph.

TABLE 19.—Percentages of total offerings, in the academic and commercial subject-matter fields, presented by the Winnetka technique

Subject-matter fields	Per cent	Subject-matter fields-Con. Po	er cent
Mathematics	49	Foreign language	. 25
English	31	Social studies	20
Science		Mean	
Commercial	26	and the second second second second	

The curriculum not reorganized in these schools.—Not one of these 11 schools is even closely approximating the practices which are being carried forward in Winnetka. In each school only a few subjects or grades are affected by the newer stechniques. The curriculum is not reorganized into common essentials on the one hand and group, socialized, self-expressive, or creative activities on the other. This statement is supported by a careful study of the place of the following activities in these schools: Dramatics, music (chorus or glee club), music (orchestra or band), dancing, art, organized games, playground work, athletics, gymnasium, shopwork. appreciation of music, appreciation of art, appreciation of literature, subject-matter clubs, social clubs, service clubs. field trips, assemblies, school paper, and student government. There is not the slightest evidence that these activities are organized in a way differing essentially from the organization of similar activities in typical schools of high standing throughout the country. Some of the activities, such as certain phases of music, art, or physical education are regarded as curricular. The others which are usually regarded as a part of the extracurriculum in excellent schools are so regarded in these schools. In nine of the schools limits are set on the extent to which each pupil may participate in the foregoing activities. The limits are the usual ones, determined in part by the pupil's scholastic standing and in part

[&]quot; See sec. 4. Ch. II, Pt. II; sec. 5, Ch. III, Pt. II; and sec. 5, Ch. V, Pt. II.

by the usual "point system" or system of "majors and minors."

There is no evidence that in any of these schools attempts are under way to make the group, socialized, self-expressive, or creative activities center around any one subject or group of subjects. Social studies and English serve this focusing function in Winnetka. Since the respondents have undertaken no extensive reorganization of the curriculum it occasions no surprise to learn that none of them is doing any grouping on the basis of social age analogous in any way to that going forward in Winnetka. Moreover, there is no recognition of certain pupils as self-reliant in the sense that they are permitted to budget a portion of their time.

In short, the group, socialized, self-expressive, or creative activities are partly curricular and partly of extracurriculum nature. The purposes of these activities, however, as set forth by these schools, are not only it harmony with the purposes of group, socialized, self-expressive, or creative activities in Winnetka but also in harmony with the purposes of such activities in any good school. As listed by the respondents the purposes are: To train the pupil in cooperative activity; to develop the pupil's initiative and originality; and to develop the pupil's special interests and abilities. One respondent also adds: To stimulate the pupil to vary from his fellows; and another says, to aid in the exploratory phase of guidance.

Academic standards are set up in these schools for such of the group activities as are curricular, in the sense that tests are given and marks are awarded which signify failure or promotion. In seven of the schools a definite correlation is planned between such knowledges and skills subjects as are being presented by means of an individualized technique and related group, socialized, self-expressive, or creative activities. For example, projects carried on in the subject-matter clubs are integrated with the work done in the subject in class.

Development of unit assignments.—In all schools each teacher worth out the goals, units, steps, or problems, for each of his objects. The approval of the principal and occasionally the approval of the department head is required. Three respondents also report that they hold the unit subject to

change as a result of a conference of teachers having the same pupils in their classes. Five schools report the unit assignment to be varied for different ability levels. Usually three levels are provided for. The type of variation is identical with that of other groups of schools operating some plan characterized by the unit assignment.38 That is, an empirical effort is made to assign the slow pupil not only quantitatively less work to do but also to give him work which is qualitatively different in that it requires less intelligence. The effort is made also to give bright pupils more work to do as well as work which demands a higher degree of intelligence. Only two respondents are attempting to define the number of units to be included in a year's work in a given subject in terms of the actual number of units which normal and diligent pupils of intelligence quotient 95 or above are able to accomplish in a year. Usually the teacher's judgment determines the number of units which should be included. Sometimes, of course, the influence of State courses of study and the necessities of the local marking system are to be reckoned with. The latter influence frequently results in a unit being defined as six weeks' work in a subject.

Assignment booklets.—In two schools assignment booklets are prepared to accompany texts not written expressly for in-These booklets, however, contain only dividual instruction. the assignments along with explanations for self-instruction. They do not contain supplementary, self-instructive, practice materials, nor answer sheets by means of which the pupil

may correct his own work.

Self-instruction.—The extent to which self-instruction is carried in these schools seems to fall far short of the Winnetka idea. For example, in only one school are provided as many as three sets of practice exercises on each goal or step. One other school reports two sets. A third school reports the use of published drill cards in mathematics, typewriting, and bookkeeping. In only two schools does the pupil correct his own practice exercises and in one of these the teacher rechecks them.

See sec. 4, Ch. II, Pt. II; Sec. 5, Ch. III, Pt. II; and sec. 6, Ch. V, Pt. II.

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In only two schools do the pupils check their own progress by taking self-administered diagnostic practice tests. In one of these schools the pupil corrects his own practice test, in the other a pupil class officer is appointed for this work. One of these schools reports three sets of practice exercises in use, the other two sets. In both schools the practice tests covering a given unit are equivalent in length, form, and content to the diagnostic mastery tests administered later by the teacher. If the pupil fails on a practice test the necessary additional practice work is indicated to him by means of code numbers printed on the test. The pupil need not refer directly to the teacher for help.

Classroom work not wholly individual.—These respondents have not seen fit to abandon all group work and class discussion in the knowledges and skills subjects in favor of supervised study and diagnostic tests. To this extent the work is not completely individualized and fails to coincide with the Winnetka technique. In these schools each pupil is not advanced at his own rate in the knowledges and skills subjects, but rather the various devices are maintained which are used by good teachers in many other schools where classes are kept on common units of work. The device used in one of these schools is referred to by the illuminating phrase an "evening-up period." This period occurs near the end of each six weeks, that is, near the end of the marking period. which determines the length of the unit in this particular school. During this "evening-up period" class discussion and oral explanation by the teacher are employed. Another school reports the requirement of "a reasonable amount of common achievement in order to keep classes organized and in order to permit of promotion by subject."

The measurement of progress.—One school reports a pretest on each new step or goal. Pupils who show mastery on the pretest are excused from work on that particular step or goal. On the whole, in these schools numerous exceptions are made to the general rule that each pupil must master each step before advancing to the next. Concessions are made to overage pupils and in general to pupils of low ability. Several schools report that a 90 to 95 per cent mastery is accepted from all pupils regardless of ability. The mastery

tests are usually objective and diagnostic but include truefalse questions and matching exercises, whereas Washburne is convinced, as was said above, that only multiple-response and completion questions are satisfactory for this purpose. Oral tests of mastery are given occasionally in five schools. These oral tests are reported to be most useful in English, social studies, and science. Mastery tests are sometimes prepared by the teachers with or without aid from supervisors or department heads. Sometimes standard tests or tests prepared by the authors of texts and work books are being used. In only two schools as many as three equivalent forms of each mastery test are prepared. Two forms are usually available where standard tests are used. Mastery tests are scored by the teacher.

The marking system. -All these schools report the awarding of marks after the fashion of traditional schools everywhere. In two schools the mark is determined solely upon the basis of the pupil's performance on the mastery test. For example, in one school if the pupil makes a mark of 90 per cent on the first trial on the mastery test he receives a mark of A; a mark of 90 per cent on the second trial is translated into a B; a mark of 90 per cent on the third trial into a C; and so on. In other schools, where several forms of the test are usually not available, the term mark is affected not only by the score made on the mastery test but also by the pupil's daily class work, by his attendance, by his industry, and by his attitude. The Winnetka procedure is approximated in only one school, in that the first test is used merely to enable the pupil to discover his weaknesses, if any, and to indicate the further work which he must do to be able to pass the next form of the test. Five schools report the maintenance of a systematic review of previously mastered goals by means of regular examinations at the end of the marking period or the semester, or both. Four schools report the percentage marking system; four, a 5-point letter system; one, a 5-point number system; and one, a letter system with plus and minus signs.

Records.—Only two respondents state that a record is kept of the pupil's progress in the knowledges and skills subjects after the fashion recommended by Washburne, namely, in

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the form of a list of all tests which the pupil must pass in the subject and the date of passing each test. Three respondents state that a record is kept of the pupil's accomplishment or progress in the self-expressive or creative activities. However, the record is not in the form of ratings on various traits but is the usual extracurriculum record which many schools are now keeping.

Promotion.—In such knowledges and skills subjects as are being presented in these schools by means of an individualized technique promotion is not rigidly determined by reference only to whether the units of the subject have been mastered. Many exceptions are made, as in most schools, with a view to the pupils' abilities, interests, and needs. In all of these schools promotion is by subjects.

Reports to parents.—Reports to parents do not resemble in any way the goal cards used in Winnetka. This perhaps should be expected, since comparatively few of the knowledges and skills subjects are given by means of an individualized technique in any one of the schools. Reports to parents are issued every 6 weeks in 9 schools; every 4 weeks in 1 school; and every 12 weeks in 1 school. Items carried on the report cards for most of the schools are: A mark indicating the quality of work done in each subject; ratings in industry, deportment, character traits, or attitudes; and a record of attendance.

6. CONCLUSION

In view of the facts which have been detailed, and many other facts which it seems unnecessary to present, but one conclusion can be reached, namely, whatever these respondents are using they are not using the Winnetka technique. In view of the manner of selecting these schools one may say with assurance that if their practices do not resemble the Winnetka technique then it is very doubtful whether any close approximation to the Winnetka technique exists in any secondary school outside of Winnetka itself. The practices of these schools are characterized by efforts to present some of their work by means of the unit assignment. These schools differ widely among themselves. Probably their work should be designated by no term more specific than "procedures characterized by the unit assignment."

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CHAPTER V: THE UNIT ASSIGNMENT IN OTHER SELECTED SCHOOLS

1. SCOPE OF THE CHAPTER

Relation to preceding chapters.—The detailed comparisons reported in the preceding chapters of Part II failed to disclose any schools whose procedures were approximating either the Dalton plan or the Winnetka technique closely enough to justify the use of either term to indicate what the schools were doing. A few schools were found whose methods, with obvious deviations, were paralleling roughly certain procedures advocated by Morrison. On the whole, however, the practices of all three groups of schools were very much alike, being attempts to develop classroom procedures adapted to the use of some form of the unit assignment.

In the present chapter an intercomparison will be made of seven other plans, methods, or procedures characterized by the unit assignment. In the order of frequency of occurrence in the secondary schools (Table 4, The Scope p. 9) these procedures are: The problem method, differentiated assignments, the laboratory plan, long-unit assignments, the contract plan, the project method, and individualized instruction. The published pronouncements concerning these plans, methods, or procedures have been so conflicting that an analysis of the literature fails utterly to establish a set. of authoritative criteria by means of which one might determine the orthodoxy of the practices of schools reporting the use of one or more of the procedures. In other words, the features listed by one writer as intrinsic in one of the procedures may be set forth by another writer as inherent in one of the other procedures. Sufficient evidence of this tendency has been presented in Chapter I, Part II. Therefore, if one sought-merely to establish that no such thing exists as an orthodox problem method, differentiation of assignments, laboratory plan, system of long-unit assignments, contract plan, project method, or method of individualized instruction, he would need go no further than the literature of the field, where the evidence is written in letters so high that he who runs may read. But the primary purpose of this chapter is to carry the investigation much further; to discover just what is done by excellent schools when they present their various courses by one or another of the seven procedures just named; and to compare these practices to ascertain whether they are really different or are only called by different names. To accomplish this purpose seven groups of highly selected schools, each group preferring one of the seven terms listed above as a name for what it is doing, were studied intensively. The reactions of the several groups to 641 different items planned to answer in great detail the 37 questions listed in section 3 of this chapter, formed the basis of the comparative study. These statistical data were supplemented by analyses of related printed and mimeographed material submitted by the schools, and by data collected through observation and interview when visits were made to a sampling of the schools.

The organization of the present chapter.—A summary statement at this point of the contents of the chapter may facilitate interpretation of the data offered. Section 2 of the chapter shows the comparative extents to which plans characterized by the unit assignment are reported in use, and in use with estimated unusual success, by schools of different sizes, of different types of organization, and of different geographical areas. To make the overview complete the brief comparisons of this section include the Morrison plan, the Dalton plan, the modified Dalton plan, and the Winnetka technique.

Section 3 describes the method of selecting seven small groups of schools for intensive study. In this section each small group of schools is studied briefly with respect to total enrollments, types of organization, and geographical areas represented.

In section 4 evidence is introduced supporting the conclusion that the practices of the seven groups of schools are essentially identical.

In sections 5 to 12 the practices of all seven groups combined are reported in detail as representative of the best current use of the unit assignment.

In section 13 further aspects of the unit assignment are discussed.

1. COMPARATIVE DATA FROM THE PRELIMINARY INQUIRY

The unit assignment in schools of different sizes.—Neither the problem method, laboratory plan, project method, nor individualized instruction shows any particular change in use or in use with estimated unusual success, as the total enrollment of schools increases. (Fig. 3.) But differentiated assignments, long-unit assignments, and the contract plan tend to increase regularly in use as the total enrollment increases, with noticeable exceptions in the largest enrollment group for all three procedures, and in the next to the largest enrollment group for the contract plan. The percentages of use with estimated unusual success both for longunit assignments and the contract plan tend to remain constant in all enrollment groups. However, the use of differentiated assignments with estimated unusual success increases regularly with increase in the total enrollment until enrollment group 501 to 750 is reached, and then decreases in the two largest enrollment groups. The Morrison plan increases regularly with increase in the total enrollment, both in use and in use with estimated unusual success.

The trends for the modified Dalton plan are similar to those noted above for long-unit assignments and the contract plan. That is, use increases regularly with increase in enrollment until the largest enrollment group is reached; and use with estimated unusual success remains fairly constant for all enrollment groups. The percentages of schools using either the Dalton plan or the Winnetka technique are too small for trends from one enrollment group to another to be obvious. However, it may be easily seen that these procedures are reported in use by a larger proportion of schools with enrollments of more than 250 than with enrollments of fewer than 250.

The average percentage of use of all 11 plans characterized by the unit assignment increases somewhat regularly as the total enrollment increases until the largest enrollment group is reached where a decrease occurs. The average percentages of use, for the several enrollment groups arranged in order

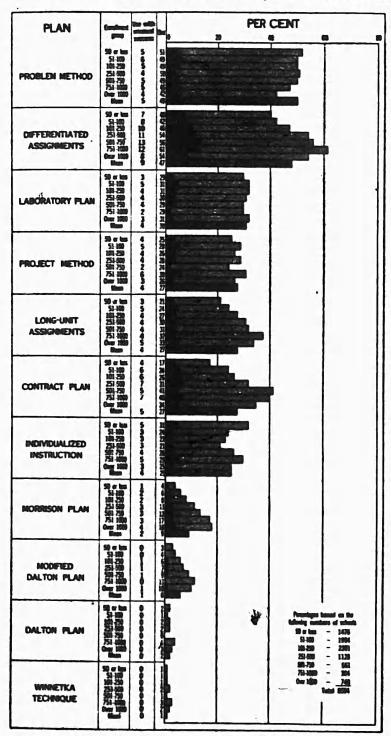


FIGURE 3.—Percentages of schools of different sizes reporting on the preliminary inquiry form the use, and the use with unusual success, of various plans characterized by the unit assignment.

1

from the smallest to the largest, are: 20.4 22.0, 22.1, 24.2, 25.4, 27.9, and 25.3.

The unit assignment in schools of different types of organization.—The responses to the preliminary inquiry indicate that reorganized schools are making considerably more use than unreorganized schools of the various plans characterized by the unit assignment. (Fig. 4.) This is suggested by the fact that schools including grades 7 to 9 and schools including grades 7 to 12 each appear above the mean of use in 10 of the 11 plans. Schools including grades 10 to 12 appear above the mean seven times. In marked contrast, schools including grades 8 to 11 appear above the mean but four times and schools including grades 9 to 12 but once.

From the standpoint of the average percentage of use of all 11 plans characterized by the unit assignment the schools of the several types of organization rank as follows: (1) Grades 7 to 9 (25.1 per cent); (2) grades 7 to 12 (25 per cent); (3) grades 10 to 12 (25 per cent); (4) grades 8 to 11 (22.9 per cent); (5) grades 6 to 11 (21.9 per cent); (6) grades 9 to 12 (21.6 per cent); (7) miscellaneous (21.1 per cent).

From the standpoint of use with estimated unusual success the advantages shown for the reorganized schools are real but less noteworthy.

The unit assignment in different geographical areas.—The percentages of Figure 5 are a convenient means of showing the relative average frequencies with which plans characterized by the unit assument were reported by the schools of the several States. Figure 5 tells its own story if the method of its construction is understood. In explanation of the figure it should be said that each school in Delaware reported in use, on the average, 2.34 of the 11 plans characterized by the unit assignment. In other words, the 27 schools replying from Delaware reported one or another of the 11 plans in use with an aggregate frequency of 63 (which is the product of 27 and 2.34). Since this was the highest average use per school, reported from the several States, it was made the base (100 per cent) from which the other average frequencies of use shown as percentages in Figure 5 were calculated. For example, the 473 schools replying from Wisconsin reported in use, on the average, 2.24 plans characterized by the

PLAN	Type of	the with whetest		PER CENT	-
PROBLEM METHOD	The Factor	467-672965	#118X81118		
DIFFERENTIATED ASSIGNMENTS	9-12 7-12 8-11 10-12 6-11 At others	9719 89979	Denropie	A SERVICE AND A	
LABORATORY PLAN	9-12 7-12 8-11 7-9 10-12 6-11 Months		HARNE	The second of th	
PROJECT METHOD	9-12 7-12 8-11 7-9 10-12 6-11 M ethers	4	TRANSPIRE DO	Control of the Contro	
LONG-UNIT ASSIGNMENTS	9-12 7-12 8-11 7-0 10-12 6-11 M cdm	_	THE PROPERTY OF	The Artist Control of	
CONTRACT PLAN	912 712 611 79 1912 611 8 8 8 8 8	1	DESCRIPTION OF THE PROPERTY OF		9
INDQ/IDUALIZED INSTRUCTION	377332933 da		Manual Ma		
MORRISON PLAN	िद्धस्य		Septimies .		
MODIFIED DALTON PLAN	10年の日本		-		
DALTON PLAN	三十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二	***************************************		President to the state of the s	and on the c of schools 4304 1294 638 614
WINNETKA TECHNIQUE	世紀の世	0000000		10-12	200 105 1341 8664

Figure 4.—Percentages of schools of different types of organization, reporting
on the preliminary inquiry form the use and the use with unusual success of
various plans characterized by the unit assignment.



unit assignment, or 96 per cent (2.24+2.34), of the average number reported in use by the schools of Delaware. The schools of Delaware, Wisconsin, New Hampshire, or Mary-

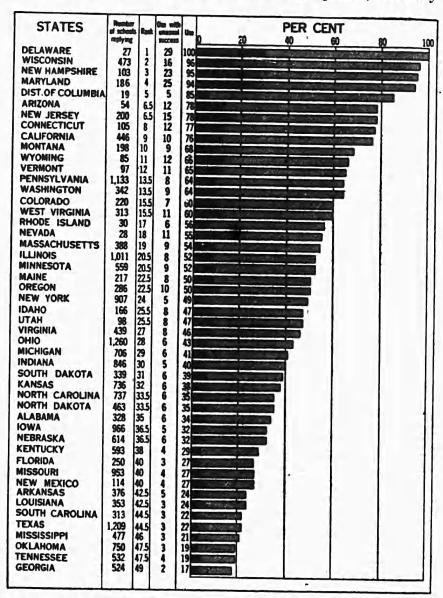


FIGURE 5.—Relative extents to which the schools of the various States report the use of some plan characterised by the unit assignment. (100 per cent equals an average frequency of use of 2.34 plans per school replying)

land are using plans characterized by the unit assignment about six times as often as the schools of Oklahoma, Tennes-

see, or Georgia. Similar comparisons for other States may be made readily from the data of Figure 5.

The relative average frequencies of use of the unit assignment with estimated unusual success are shown by the shaded portions of Figure 5. Gross frequencies may be obtained for any State by multiplying the corresponding percentages by 2.34 and that product by the number of schools replying from the State.

If the States were ranked according to use with estimated unusual success, considerable rearrangement of the rank order shown in Figure 5 would occur. However, use with estimated unusual success throughout the several States decreases roughly in the same ratio with which use decreases.

3. SELECTING SCHOOLS FOR INTENSIVE STUDY

The follow-up inquiry.—Comprehensive follow-up inquiries were addressed to schools reporting on the preliminary inquiry unusual success with one or more of the seven procedures (namely, the problem method, differentiated assignments, the laboratory plan, long-unit assignments, the contract plan, the project method, and individualized instruction) and also to schools recommended by informed persons, not directly connected with the schools concerned, to be using with unusual success one or more of these seven plans. Three follow-up forms were used. One form was built to secure information concerning each of the following five procedures or any combination of them: Differentiated assignments, long-unit assignments, individualized instruction, contract plan, and laboratory plan. A second form was constructed to secure detailed and comprehensive information concerning the practices of schools using the problem method. The third form served a similar purpose for the project method. The second and third forms were exactly alike line for line with the one exception—that the word "project" appeared throughout one form where the word "problem" appeared in the other. Moreover, the last 21 pages of the first · form consisted of objective items matching line for line the objective items of the corresponding pages of the second and third forms. That is, in the main, all three forms were alike.



The first form also carried four preliminary pages given over to a study of the extent to which the respondents regarded the five procedures covered by the form to be synonymous or to be features one of another. On the second and third forms the preliminary pages were aimed partly at discovering whether schools using the problem or project method had really departed from the traditional subject-matter fields, the traditional required and elective subjects, and the traditional number of fixed units required for graduation. The preliminary pages of the second and third forms were aimed also at discovering whether the definition of a problem, as given by respondents from schools using the project as given by respondents from schools using the project as given by respondents from schools using the project method.

Thus, in the construction of the inquiry forms the stage was set for a detailed, comprehensive, and objective intercomparison of the practices of seven highly selected groups of schools, each group preferring a different term or combination of terms as a name for its practices. The schools composing the seven groups were chosen by identical methods. The respondents reacted to the same items arranged in identical orders. The preliminary pages of the forms were carefully planned to detect such possible differentiating characteristics as could be anticipated. Throughout each inquiry form constant and ample opportunity was provided for respondents to record differentiae not specifically evoked by the objective items.

Supplementary data.—The tabulated responses to the inquiry forms were supplemented in two ways. First, they were supplemented by analyses of the following inclosures requested from each school: (1) Report cards; (2) permanent record forms; (3) attendance blanks and forms; (4) samples of problems, units, or assignments now in use; (5) circulars of instructions to teachers concerning the use of the plan; (6) forms used in organizing the school for the year; (7) the school's daily program; (8) printed or typed material on graduation requirements; (9) samples of tests including those measuring attitudes, habits, or adaptations, especially well; (10) class record sheets; (11) printed or typed



rules and regulations concerning promotion; (12) printed or typed studies giving objective or scientific evidence of the value of the plan; and (13) any other printed or typed material believed helpful to an understanding of the school's practices. Second, the data from the follow-up inquiries were supplemented by information acquired through visits to a sampling of the schools.

Number of schools selected for intensive study.—From 453 replies to the follow-up inquiries, 362 schools were selected to represent best practices in connection with the use of one or more of the seven plans characterized by the unit assignment. These 362 schools are distributed among the seven procedures as shown in Column 2 of Table 20. At this phase of the study differentiated assignments disappear as an independent procedure. Schools using differentiated assignments invariably combine them with one of the other terms. Hence, in the last-named group of Column 2, Table 20, the "combination" may be interpreted to mean differentiated assignments combined with one or another of the remaining terms.

Table 20.—Three hundred sixty-two schools using some plan characterized by the unit assignment, classified by percentage frequencies 1 according to total enrollment

	Total			Enrol	lment	group							
Plan reported	number of schools	50 or fewer	51 to 100	101 to 250	251 to 500	501 to 750	751 to 1,000	More than 1,000					
1	1	2	4			7	8	•					
Long-unit assignments Individualized instruction. Contract plan Laboratory plan Problem method	40 24 58 25 62 54	11 19 4 4 22	17 3 12 7 19	8 6 14 9 21 22	15 6 29 8 6	10 0 14 12 -14	4 4 17 0 26	10 12 20 3 12					
Combination of one of the above with differentiated assignments.	98	30	27	21	21	31	43	40					
Total	362	100	100	100	100	100	100	100					

Based on the following numbers of schools: Enrolling 50 or fewer pupils, 27 schools; 51 to 100, 59; 101 to 250, 111; 251 to 500, 62; 501 to 750, 42; 751 to 1,000, 28; more than 1,000, 38.

Terminology preferred in schools of different sizes.—The widest diversity of nomenclature exists among schools of all sizes. (Table 20.) With only minor exceptions all terms

are distributed through all enrollment groups. A combination of terms is preferred to any single term by five of the seven enrollment groups.

Terminology preferred in schools of different types of organization.—None of the seven terms is localized in schools of any given type of organization. (Table 21.) The laboratory plan does not appear alone as a term preferred by any of the respondents from schools including grades 8 to 11, 10 to 12, or 6 to 11. Otherwise, each term is preferred by certain schools of each type of organization.

TABLE 21.—Three hundred sixty-two schools using some plan characterized by the unit assignment, classified by percentage frequencies according to type of organization

	Total			Гуре о	f organ	ization	1	
Plan reported	number of schools	9 to 12	7 to	8 to 11	7 to	10 to 12	6 to	Mis- cella- neous
1	1	3	4		6	1	8	,
Long-unit assignments Individualized instruction. Contract plan. Laboratory plan.	€ 24 58 26	9 7 16 10	9 5 17 9	19 14 5	14 7 24 7	30 7 14	5 9 14	14 6 14
Problem method. Project method. Combination of one of the above with differentiated assignments.	62 54 98	14 11 33	18 17 25	19	10 17	7 21	31 23	25 11
Total	362	100	100	100	100	100	100	100

¹ Based upon the following numbers of schools: Including grades 9 to 12, 108 schools; grades 7 to 12, 134; grades 8 to 11, 21; grades 7 to 9, 29; grades 10 to 12, 14; grades 6 to 11, 22; miscellaneous or atypical grade combinations, 34.

Terminology preferred in different geographical areas.— None of these terms is especially preferred by the respondents from any particular geographical area. (Table 22.) In each area each term is reported in use by some schools. The contract plan has slightly more vogue in the West and Middle West than in other areas. The problem method is slightly preferred in the Middle Atlantic and Southern States. All areas show a considerable tendency to use a combination of terms to describe their practices.

TABLE 22.—Three hundred sixty-two schools using some plan characterized by the unit assignment, classified by percentage frequencies according to geographical areas

Plan reported	New Eng- land	Middle Atlan- tic	South-	Middle West	West	Total	
i	3		4			7	
Long-unit assignments	3 7	10	15	10	14	11	
Contract plan	14	0	11	20	19	16	
Laboratory plan	7	9	2	9	7	7	
Problem method	17	19	23	16	10	17	
Project method	17	15	15	14	16	15	
differentiated assignments.	35	85	20	25	27	27	
Total	100	100	100	100	100	100	

¹ See Table 20 or 21 for numbers of schools upon which percentages are based.

4. EVIDENCES OF ESSENTIAL IDENTITY

The first line of evidence.—In this section three lines of evidence will be presented showing that methods of organization, administration, and classroom procedure are essentially alike in all seven groups of schools selected for intensive study regardless of the name preferred for the practices reported. First, with but one exception the offerings of all 362 schools are organized in the usual way. That is, the offerings are expressed in terms of the usual subject-matter fields, subdivided into the usual required and elective courses, which in turn are subdivided into units and unit assignments called by various names. The usual number of units defined in the usual way is required for graduation. This finding is

The one exception is the Girls' Vocational School, Minneapolis. In the retail-training department the offerings are not organized into subject-matter fields but are defined as "interests having continuity" such as "publishing a weekly news sheet, running a supply store, or giving a pageant developed, staged, and costumed by the group." The unit in this department is an "enterprise" and the time spent on each enterprise varies for different pupils. Units are exclusively of a group nature, of immediate practical value, and directed by the teacher. Each pupil'does what her capacities and interests make most profitable for her. Promotion follows automatically upon completion of 10 weeks' attendance and evidence of sufficient interest to warrant retaining the pupil in the department. For graduation a typical requirement of two years' attendance is made, plus a period of satisfactory employment. However, the time requirement is modified by consideration of the occupation for which the pupil is preparing. The school draws pupils from the entire city. The work of the retail-training department is entirely free from the necessity of serving academic rather than vocational aims. Hence in these and in other respects, the department presents a decidedly atypical situation.

of primary significance in the consideration of the problem and project methods since the literature of the field plainly leads one to expect curriculums organized along nontraditional lines.

The second line of evidence.—The second line of evidence is limited to the problem method and the project method. It reveals the rather startling fact that the definition of a problem by respondents from schools using the problem method, varies in no significant way, if at all, from the definition of a project as given by respondents from schools using the project method. (Tables 23 and 24.) This identity holds whether the respondents are considering the abstract virtues of a good problem or project, or merely the actual characteristics of most problems or projects in use in their schools.

If the genus of the definition is an activity (Table 23), it follows that in schools using the problem method a good problem (Column 2, Table 23) is regarded by half or more of the respondents as an activity, judged both by the pupil and the teacher to be worth while, carried on in a real life setting, initiated by the pupil, and of immediate practical value to him. But exactly these same five differentime are employed most frequently to define a good project by respondents from schools using the project method. (Column 3, Table 23.)

TABLE 23.—Characteristics of problems compared with characteristics of projects. Reactions of two groups of schools expressed in percentages

An activity	A good prob- lem	A good project	Most prob- lems in use in schools studied	Most proj- ects in use in schools studied
i		4	4	
1. Judged by the pupil to be worth while 2. Judged by the teacher to be worth while 3. In real-life setting. 4. Approximating real-life setting. 5. Self-initiated by the pupil 6. Initiated by the teacher and accepted by the pupil 7. Self-directed by pupil 8. Directed by teacher 9. Of immediate practical value 10. Not necessarily of immediate practical value.	63 62 56 39 59 39 86 86 55	61. 62 44 30 50 81 34 32 44 26	37 66 29 38 29 59 1 28 62 34 42	33 56 35 37 20 55 1 13 57 35

¹ Only difference the critical ratio of which is as large as 2.

TABLE 24.—Characteristics of problems compared with characteristics of projects. Reactions of two groups of schools expressed in percentages

A unit of learning or teaching	A good prob- lem	A good project	schools	Most proj- ects in use in schools studied
1	2	1	₩4	5
1. Judged by the pupil to be worth while.	57	41	442	124
2. Judged by the teacher to be worth while	53	58	66	61
a. Self-intraced by the pupu	47	36	16	6
4. Initiated by the teacher and accepted by the pupil 5. In mastery of which pupil is almost entirely self-direct-	31	38	57	
5. In mastery of which pupil is almost entirely self-direct- ing. 6. Wherein pupil receives much direction from printed	1 55	1 37		52
 In mastery of which pupil is almost entirely self-directing. Wherein pupil receives much direction from printed or typed instructions. Wherein pupil receives much oral direction from the 		23	57	52 12
5. In mastery of which pupil is almost entirely self-direct- ing. 6. Wherein pupil receives much direction from printed or typed instructions. 7. Wherein pupil receives much oral direction from the teacher.	1 88	1 37	57 24	52 12 46
5. In mastery of which pupil is almost entirely self-directing. 6. Wherein pupil receives much direction from printed or typed instructions. 7. Wherein pupil receives much oral direction from the	1 55 31	1 37	24 47	52 12

¹ These two critical ratios each equal 2.

Nor does the parallel stop at this point. Respondents, from schools using the problem method, most frequently consider most problems actually in use (Column 4, Table 23) to be activities judged by the teacher to be worth while, initiated by the teacher and accepted by the pupil, and directed by the teacher. While comparing the definitions of problems and projects one must not lose the significance of the difference between good problems and most problems actually in use. This difference shows that a wide gap separates the ideal from the practical. In the opinions of those best qualified to pass a judgment, namely the respondents themselves, most problems in use in their schools differ from good problems in important ways. That is, the former are not necessarily judged by the pupil to be worth while, are not initiated by him, are not carried on in a real-life setting, and are not of immediate practical value to him. The fact that good projects are also differentiated in exactly the same way from most projects in actual use (compare Columns 3 and 5, Table 23) leaves little doubt that problems, in schools using the problem method, do not differ in any way from projects in schools using the project method.

All doubt of the identity of problem and project is dispelled by further comparisons. (Table 24.) If the genus of the

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definition be changed from an activity to a unit of learning or of teaching, to most respondents using the problem method a good problem is a unit of learning or of teaching judged both by the pupil and the teacher to be worth while, initiated by the pupil, in the mastery of which the pupil is almost entirely self-directing, and of immediate practical value to him. (Column 2, Table 24.) But to most respondents from schools using the project method a good project is exactly the same thing. (Column 3, Table 24.)

Moreover from this second point of view the same wide interval noted in the first comparison separates the ideal from the practical. Most problems in schools using the problem method (Column 4, Table 24) like most projects in schools using the project method (Column 5, Table 24) are units of teaching or of learning judged by the teacher to be worth while, initiated by the teacher and accepted by the pupil, wherein pupils receive much direction from the teacher either orally or in the form of printed directions. In other words, in these highly selected schools the problems and projects in actual use are not necessarily judged by the pupil to be worth while, are not initiated by the pupil, are not necessarily of immediate practical value to him, and he is not left largely to self-direction of his efforts to master them.

The preceding comparisons of "problem" and "project" have been limited to the typical or most frequently accepted statements concerning the nature of problems and projects. However, each of the 38 possible comparisons of problem and project in Tables 23 and 24 supports the conclusions (1) that an ideal problem in schools using the problem method is precisely the same thing as an ideal project in schools using the project method, and (2) that problems in actual use in schools using the problem method are made of exactly the same stuff. as projects in actual use in schools using the project method. A common-sense inspection of Tables 23 and 24 is sufficient to establish these conclusions, and statistical treatment of the data confirms the common-sense conclusions. pairs of compared percentages, in Tables 23 and 24 not one pair shows a difference which is statistically real, in the sense that the difference divided by its standard error is 3 or more. Only 3 of the 38 ratios are as large as 2.

The third line of evidence.—So far the evidence has shown that problem and project are defined synonymously by the respondents and that in all seven groups of schools the offerings are organized into the usual subject-matter fields, subdivided into the usual courses, which in turn are broken up into units and unit assignments. The third and last line of evidence to be given in this chapter is drawn from a comprehensive and detailed exploration and intercomparison of the actual practices of the seven groups of schools. parative study is based upon the tabulated responses of the seven groups of schools to 21 pages of inquiry material (mentioned in section 3) carrying 641 items of information. The tabulated responses answered in clear-cut detail the following 37 questions (mentioned in section 1). Probably there will be mutual agreement that if differences actually exist in the practices of the several groups of schools under the various terminologies, then objective answers to these 37 questions should reveal them.

- 1. In what subjects and in what grades is the procedure being used?
- 2. Does the procedure involve breaking up each course (as tenth-grade English) into several large allotments or assignments? If so, how many such major allotments are formed?
 - 3. What name is given to the major allotments?
- 4. Are definite time limits set within which each assignment or major allotment must be completed? If so, what is the amount of time allotted for the completion of a typical assignment?
- 5. Are the large allotments or assignments subdivided into smaller units? Into problems? If so, how much time is allowed for the completion of a typical smaller unit? Of a typical problem?
 - 6. Of what do assignments consist?
- 7. Do assignments provide a separate series of units or problems for each ability level? If so, for how many levels?
- 8. How are the assignments varied for the different ability levels?
- 9. Is considerable choice of topics, references, and problems allowed pupils even within the assignment for a given ability level?

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- 10. Does the assignment for the lowest level include all fundamental principles, main ideas, or minimum essentials which all pupils must master?
- 11. At the beginning of a course do all pupils start with the series of units or problems for the lowest ability level and advance through the assignments for the higher levels as far as they can? If not, how do you decide with which ability series a pupil should begin?
- 12. Later in the course, when pupils' abilities have become known, may some pupils omit the lowest level assignments? If so, under what-conditions?
- 13. How and by whom are assignments, units, and problems planned?
- 14. How often are assignments, units, and problems revised?
- 15. Is a systematic effort made to correlate the assignments, units, and problems of one subject with the assignments, units, and problems of other subjects which a pupil may be carrying at any given time? If so, how is this correlation obtained?
- 16. Are pupils encouraged to suggest additional or original problems?
- 17. What outstanding difficulties have been encountered in the planning, revision, and correlation of assignments, units, or problems?
- 18. What types of learning (and of teaching) are recognized under the plan?
- 19. What teaching steps do you follow in teaching according to the plan and in what sequence do these steps follow each other in each type of teaching where the plan is used?
- 20. For each teaching step what is (a) the purpose; (b) the methods employed, that is the activities of pupils and teacher; and (c) the proportionate time allotment?
- 21. To what extent do pupils make use of self-corrective practice materials in the mastery of assignments?
- 22. What kinds of tests or examinations are given? What do they measure? When are they given? By whom are they prepared?

23. Are pupils given pre-tests on assignments, units, or problems to determine whether they have already mastered all or some of the essential elements? If so, are pupils excused from work on a unit or part of the unit if the pre-test shows mastery? How do excused pupils employ their time during class periods from which they are excused?

24. What kind of records are kept of pupil progress?

25. What kind of marking system is used?

- 26. How often are reports sent to parents? What data do these reports carry?
- 27. Are pupils promoted only when they have finished the assignments in the subjects for the given grade?

28. What are the rules governing pupil promotion?

- 29. Are brighter pupils accelerated? If so, how is this acceleration provided for?
- 30. Are slower pupils retarded? If so, how is this retardation provided for?
 - 31. In what subjects is acceleration most pronounced?
 - 32. In what subjects is retardation most pronounced?
- 33. What is the length of the school day? The number of periods? The length of each period?
- 34. How are classrooms equipped for work being given on the plan?
- 35. Is the plan founded on the supposition that pupils will devote some time to home study? If so, how many minutes per week in each grade?

36. If the amount of home study varies for the different grades, what are the reasons for the variation?

37. Are pupils classified as "supervised" and "self-reliant" (or equivalent terms)? If so, do self-reliant pupils have the privilege of ignoring to a considerable extent the fixed daily schedule of classes? How many pupils were classed as self-reliant during the second semester of 1929-30?

When the thousands of responses of the 362 schools to the 641 items covering the above 37 questions were tabulated, classified according to terminology preferred, reduced to percentages, and compared, the evidence showed beyond a doubt that the practices of the seven groups of schools were essentially alike.



An illustration of the inherent identity of the reactions of the seven groups of schools to the 641 items is given in Table 25 where the percentage reactions of the seven groups to 70 items taken at random are reproduced. If one reads any horizontal row of percentages in Table 25 he will note that approximately equal percentages of schools in each group have reacted in the same way to the given item. If the percentage reaction to an item is high for one group of schools it is high for the other groups. If it is low for one group it is just about as low for the other groups, Precisely this situation obtains for each of the 641 items. From a commonsense standpoint the conclusion is justified that these groups of schools reporting different names for their procedures are doing the same things in the same ways. Practices typical of one group are typical of all. Practices tabooed in one group are tabooed in all.

TABLE 25.—Comparative percentage reactions of seven groups of schools each of which prefers the term indicated for its practices in connection with the use of the unit assignment

Items on which the sev- eral plans are compared	Long- unit as- sign- ments	Indi- vidu- alized instruc- tion	Con- tract plan	Labo- ratory plan	Prob- lem method	Project meth- od	Some combi- nation of terms ¹	Total
1	2	8	4	1	•	1	8	•
1	48	12	24	23	33	31	32	30
2	15	21	31	23	11	15	18	18
8	8	12	10	12	ii	9	6	1
4	90	92	88	92	92	87	87	89
\$	55	79	50	62	- 56	57	54	5
d	20	46	26	39	44	56	81	35
7	65	50	72	54	40	41	58	54
8	90	91	93	93	96	83	87	9
0	5	4	2	7	2	4	2	
ŏ\	50	71	55	73	78	58	60	6
1\	28	8	14	4	17	17	13	1
2	30	42	26	54	50	30	36	3
3	10	21	14	31	15	7	21	i
4X	5	12	7	8	13	11	8	
5	8	8	7	4	2	7	5	
16	15	17	12	19	23	13	15	1
7	15	29	12	27	18	19	20	1
8	10	21	9	19	18	9	12	1
9	2	8	10	0	2	9	4	5
20	80	72	53	90	85	76	81	8
21	79	89	48	94	100	98	77	86
22	36	40	29	51	60	61	36	4
23	31	28	33	47	55	42	35	4
24	36	36	37	63	57	44	42	4
25	24	24	17	43	27	81	20	2

¹ See Table 21 or 22.

TABLE 25.—Comparative percentage reactions of seven groups of schools each of which prefers the term indicated for its practices in connection with the use of the unit assignment—Continued

Items on which the several plans are compared	Long- unit as- sign- ments	Indi- vidu- alized instruc- tion	Con- tract plan	Labo- ratory plan	Prob- lem method	Project meth- od	Some combi- nation of terms	Total
1	3	1	4	5		7	8	,
26	2	0	2	12	4	6	1	4
	75	66	43	50	65	56	67	61
	52	41	38	62	47	39	39	42
	69	49	57	23	49	57	61	56
	62	67	62	58	55	50	47	55
31	60	67	85°	73	66	66	69	70
	44	54	28	42	56	37	40	42
	68	58	60	57	53	51	62	59
	55	59	57	54	52	52	51	53
	35	25	17	23	24	23	26	25
36	55	62	52	62	58	54	45	53
	45	46	33	46	56	56	44	47
	68	58	48	58	82	65	52	62
	35	46	22	35	47	39	35	37
	52	67	40	73	61	63	49	55
41	78	75	79	81	73	63	71	73
	22	33	34	19	21	13	19	22
	60	50	56	58	60	70	57	59
	5	4	12	4	6	9	10	8
	18	17	29	23	19	20	29	23
46	70	71	69	65	65	65	71	68
	10	17	19	23	18	11	15	16
	25	38	28	38	37	24	24	29
	8	12	8	8	17	14	10	10
	84	95	98	93	100	96	92	94
51	40 66 82 45 68	62 83 50 58	34 66 83 38 59	47 58 81 58 50	54 80 98 48 65	55 67 95 52 52	42 65 82 55 71	45 66 86 49 62
56	43	50	38	58	45	59	35	45
	62	67	76	73	68	72	65	69
	60	62	52	50	56	56	42	52
	22	38	41	31	24	26	20	27
	46	56	54	74	52	68	51	56
61	41	52	61	86	56	64	46	54
	45	52	56	82	60	60	51	57
	33	32	29	59	41	80	27	83
	85	79	81	85	87	39	86	85
	28	33	26	35	26	26	29	28
66	38	38	43	35	39	35	46	40
	18	25	19	12	19	19	18	18
	85	79	79	85	83	89	82	83
	30	29	25	31	40	28	40	38
	82	83	72	81	77	76	74	77

Moreover, statistical treatment of the data supports the common-sense conclusion. For example, for each item of Table 25 there are 21 different pairs of percentages to be com-

pared. Hence in the entire table there are $(70 \times 21 =)$ 1,470 paired percentage reactions to be considered. Of these 1,470 pairs of compared percentage reactions only 43 pairs, or less than 3 per cent, show differences which are statistically real in the sense that the difference divided by its standard error is 3 or more. Seventy-two, or less than 5 per cent, are 2.5 or greater. Further random samplings 2 yielding practically the same results show this to be a true picture for all 641 items covering in minute detail the 37 questions listed above as criteria.

Hence the conclusion is inevitable that in practice differentiated assignments, long-unit assignments, individualized instruction, the contract plan, the laboratory plan, the problem method, and the project method are one and the same thing—differing in name only. This conclusion carries no implication that uniformity of practice prevails in any or in all of the seven groups of schools. On the contrary great variability exists. However, the variability of practice in any one of the groups of schools is essentially the same in kind and in degree as the variability in any other group, and hence in all groups. In the remaining sections of this chapter a composite of the practices of all 362 schools is presented to show the best current practices of secondary schools in the use of the unit assignment.

5. EXTENT TO WHICH THE UNIT ASSIGNMENT HAS BECOME ESTABLISHED

Years in use.—A study of the schools classified according to size shows no significant differences in the ranges of years during which the unit assignment has been in use. However, the median number of years of use shows a fairly regular increase with increase in the total enrollment, as follows: 50 or fewer, 1.1 years; 51 to 100, 1.4 years; 101 to 250, 1.6 years; 251 to 500, 2.5 years; 501 to 1,000, 2.6 years; more than 1,000, 3.1 years. A study of the schools classified according to type of organization shows that the modal number of years of use is two in schools of all types of organization except schools including grades 9 to 12 wherein the typical period of use is three years. The range of use extends



⁹ The same test was applied to two additional random samplings of 70 items each with practically the same results. In the second random sampling 30 ratios of 3 or more appeared. In the third random sampling 44 ratios or 3 or more appeared.

beyond 10 years only for certain schools including grades 9 to 12, 10 to 12, or 6 to 11.

Extent to which the offerings of the various subject-matter fields are presented by the unit assignment.—From a fourth to about four-fifths of the offerings of these 362 schools in the several subject-matter fields are presented by means of the unit assignment. (Fig. 6.) The unit assignment is used least often in physical education and most often in social studies. In most schools the unit assignment is a decided

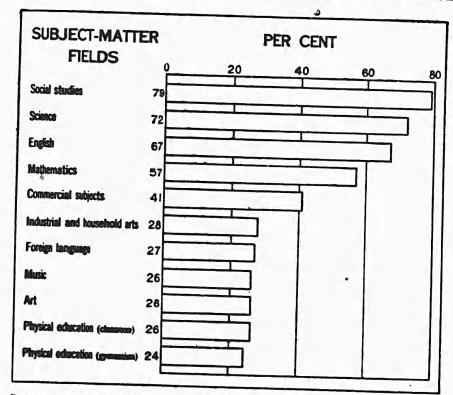


Figure 6.—Percentages of offerings in each subject-matter field presented by means of some form of the unit assignment in 362 highly selected schools

innovation, functioning in a small number of subjects, often in only one subject.

Individual subjects and the unit assignment.—The essential fact to be noted is the very considerable variation among the subjects of any given subject-matter field in the extents to which the offerings are presented by means of the unit assignment. (Fig. 7.) For example in social studies, history ranks 1; sociology, 3.5; civics, 6.5; economics, 11;

coccupations, 16; and current events, 17.5 Similar situations may be noted for the remaining subject-matter fields.

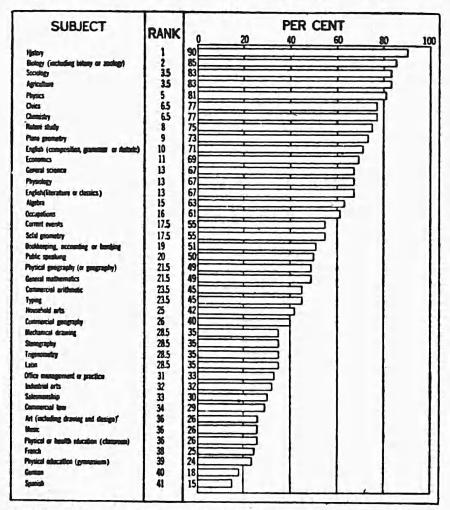


FIGURE 7.—Percentages of offerings, in each of 41 subjects, presented by means of some form of the unit assignment in 362 highly selected schools

6. BUILDING UNIT ASSIGNMENTS

Fourteen names for unit assignments and subdivisions of unit assignments.—Each course presented by means of the unit assignment is first broken up into several large allotments each possessing a certain unity and all usually differing among themselves in length, according to the nature of the course, of the subject matter, or of the basal text. Occasionally the allotments are of uniform length as determined by the frequency with which marks are issued. Fourteen dif-

ferent names are used in different schools to designate the unit assignments by means of which these major allotments of subject matter are presented to the pupil. These names in the order of the frequency of their occurrence are: (1) Unit, (2) assignment, (3) term assignment, (4) contract, (5) a name descriptive of the subject matter included, (6) project, (7) problem, (8) topic, (9) block, (10) enterprise, (11) element, (12) cycle, (13) goal, and (14) major. As a rule two or more of the aforementioned terms are used in each schoolthe one term to designate the unit assignment, the others to characterize the subdivisions of the unit assignment. The terminology is completely chaotic. For example, contracts may be divided into units, or units into contracts. For the purposes of the ensuing discussion the term "unit" will be used to refer to the pupil's goal or objective, while the term "unit assignment" will be used to refer to the materials planned by the teacher by means of which the pupil may master the unit or attain the desired goal or objective. This distinction is discussed further in section 1 of Chapter VI, Part II.

The guide sheet.—The unit assignment as presented to the pupil usually consists of (1) directions for study, (2) references for reading, (3) a list of supplementary projects, (4) an outline of minimum essentials, and (5) a tentative time allot-The mimeographed sheets carrying the above materials are known in most schools as guide sheets. The guide sheets may also carry an "approach paragraph" to stimulate the pupil's curiosity and interest; an introductory statement of the objectives of the unit; a short list of basic questions; necessary explanations; a word-study list, or a vocabulary of difficult words; experiments to be performed; topics for discussion, dramatization, or demonstration; notice of special difficulties to be encountered; samples of how to do the work required; lists of materials and apparatus needed; assignments of individual reports to be made to the class; additional elective work; references to correlation with other subjects; and a quiz on the assignment.

Time allotted to units and to subdivisions of the unit.—No hard and fast rules are followed. As a rule a tentative time limit is set for each unit and the time is varied according to

the nature and amount of subject matter involved as well as according to the abilities of the pupils. The amount of time given to each unit ranges from one week to an entire semester. Analogous observations hold for the subdivisions of the unit.

Separate assignments for each ability level.—Sixty-two percent of the 362 schools provide differentiated assignments for each ability level. Typically 3 levels are provided for, though

the range is from 2 to 5.

Usually a certain minimum amount of work is prescribed for all pupils. Work beyond this minimum is supplementary in nature and is based upon the individual pupil's special interests and capacities. Bright pupils do more creative work than other pupils, read more, and more frequently make special reports for the benefit of the rest of the group. Since slow pupils frequently need special remedial or coaching help in order to succeed with the work of the first level, there appears to be a tendency to include too much material or too difficult material in the assignment for the lowest level. The arrangement of the materials of the assignment in such a way that pupils advance from tasks which are fundamental and simple to tasks which are more complex and difficult seems to be desirable wherever practicable.

Choice of topics, references, and problems within the assignment for a given level. - More than half the schools report that pupils are allowed considerable choice of topics, references, and problems even within the assignment for a given level. Apparently the privilege of choosing is restricted too often to pupils of the upper levels. For instance, in some schools differentiation of assignments is secured through a list of optional projects. Each pupil masters the minimum assignment. Optional projects are then taken up in accordance with the interests and capacities of the individual pupil. But the slow pupil rarely gets past the minimum requirements. In other schools the assignment is divided into a number of levels, usually three. Each pupil masters the elements of the assignment for the lowest level and then advances as far as he can through the assignments for the upper levels. Again the slow pupil is held to a series of required tasks unbroken by optional work since elective projects appear only in the upper levels and he rarely gets beyond the assignment

for the first level. Only a few schools permit pupils working on the lowest level to exercise a considerable degree of choice in the tasks to be performed, but the evidence from these schools highly favors the practice.

Occasionally unit assignments are constructed in three separate and independent forms, one for each of three ability levels. The pupil's previous work in the subject, plus the results of mental tests, aid the teacher in deciding which form each individual pupil shall attempt to master. Such differentiation is found only in schools practicing homogeneous

grouping.

Planning and revising units and unit assignments.—As a rule the teacher plans the units and unit assignments for her own classes. The completed unit and unit assignment are frequently submitted to the department head, supervisor, or principal for approval. However, in many schools not even this approval is required. In many instances the teacher adapts or modifies units and unit assignments prepared by other agencies such as State departments of education, committees of local teachers of the city or county guided by local supervisors, or authors of published texts. About 8 per cent of the schools report that a special committee of teachers of a given subject plans the units and unit assignments for the teachers of the entire city or county. Occasionally the teacher works out units which are later submitted to a committee of teachers in the same subject and grade for suggestions or modifications. In rare cases the teacher builds the unit and unit assignment cooperatively with the pupils. In such cases although the pupils in the main are guided toward acceptance of a unit and the corresponding unit assignment which the teacher has in mind no one can gainsay that a certain psychological advantage is realized through pupil participation. Moreover the original unit and unit assignment are often modified by the pupils in worth while ways.

In less than a fifth of the schools the initial planning of the unit and unit assignment is followed by conferences of teachers having the same pupils in their classes, with a view

to securing correlation.

Nine-tenths of the respondents report that units and unit assignments are revised continuously. In the remaining

schools the units and corresponding unit assignments are revised regularly at the end of each semester or year.

An effective organization for planning and revising units and unit assignments.—The schools of Albemarle County, Va., including the city of Charlottesville, have developed an admirable organization for the effective building of units and unit assignments and for the constant cooperative testing and revision of them. In the organization for this work one general supervisor, E. E. Windes, is employed jointly by the county and the University of Virginia. Special supervisors are employed by the university. Three high-school principals are jointly employed by the county and the university and serve as critic teachers.

The units are frankly found through the analysis of the established subject matter. Suggestions for differentiation of teaching procedure are found through the analysis of psychological studies which have been made, and are now being made, of the differences in native capacities and aptitudes, and in the methods by which various types of pipils learn.

The procedure in developing units and unit assignments may be only briefly outlined. First, a conference of teachers in a certain field is held with the general supervisor and the supervisors of the specific subject-matter field. Each teacher chooses a unit to develop or revise. The completed or revised unit and unit assignment are later submitted to the supervisor for study and criticism. The supervisor may submit the unit and unit assignment to other teachers and consensus of opinion may determine their tentative form. The unit assignment is then mimeographed by the county office for all county schools. The teachers using the unit assignment keep a log of their experiences and of the pupils' experiences with it. These records become the basis for the revision of the unit assignment. A further check upon results obtained by the use of the unit assignment is made by means of centrally prepared objective tests. These tests are given solely for purposes of analysis of the effectiveness of the unit and need not be considered by the teachers when awarding marks.

The importance of such a thoroughly organized venture should be recognized. It is lack of a similar effective organization in most schools of the country which renders a vast amount of energy now being expended in building units and unit assignments unlikely to be productive of any permanent improvement.

Those concerned with this cooperative venture in Albemarle County are convinced that the development of good units and unit assignments runs the gamut of educational theory and practice. General objectives of the unit must be stated. Specific objectives for each of three ability levels must be formulated in terms of abilities, attitudes, adaptations, and knowledges to be acquired. References and aids to study must be prepared, materials must be assembled, and tests for mastery must be built.

The correlation of unit assignments.—In more than three-fifths of the schools studied intensively no systematic effort is made to secure correlation of the assignments in all subjects which a pupil may be carrying at a given time. In the remaining schools the chief means of securing correlation is the joint meeting or conference which may include (1) individual teachers from different departments, (2) committees of teachers from different departments, or (3) department heads. As an interesting supplement to, and preparation for, these conferences each teacher may read critically and systematically her pupils' guide sheets in all subjects. By this means she discovers many points where correlation of other subjects with her own subject is possible.

The following are samples of correlation as actually practiced in these schools: (1) Assignments in the several subject-matter fields are studied by committees of teachers to eliminate unnecessary repetitions. (2) Units are planned to touch more than one subject and credit is allowed in each subject. (3) Pupils in vocational agriculture are given farm problems in mathematics, chemistry, and general science. (4) The pupil may choose subjects for English composition dealing with his work in other subjects. (5) Themes written in history are checked by English teachers and allowed credit in the English department. (6) The pupil's required readings in the several courses are carefully checked

with a view to securing an optimum number of identical references.

In general the respondents are dissatisfied with their efforts at correlation and frankly report that they are not attempting enough along this line.

Difficulties encountered in planting, revising, and correlating unit assignments.—Many respondents report that the work of correlating assignments in the several subject-matter fields can prosper only when a cooperative spirit exists among teachers, department heads, supervisors, and principals. Departmental jealousies, antagonism between supervisors. and a lack of that interest in other subjects and subjectmatter fields, which all teachers, department heads, and supervisors should feel, are barriers to improved correlation. However, the chief kindrance to correlation, as well as to planning and revising unit assignments, is lack of time due to heavy teaching, administrative, or extracurriculum duties. Planning, revising, and correlating unit assignments are regarded entirely too generally as spare-time activities for teachers on a full-time teaching schedule. Most desirable results are not likely to be obtained until teachers cooperating in this work are allowed a reasonable margin of time in which to do it effectively.

Other difficulties which make uphill work of the planning, revising, and correlating of assignments, in the frequency with which they were mentioned by the respondents, are: (1) The teacher's lack of training for the work and experience in it; (2) the impedimenta of rigidly prescribed courses of study, State or local syllabi, and State examination requirements; (3) the fact that any given class may contain pupils of all abilities, interests, and aims (as, for example, college preparatory, commercial, and industrial arts pupils); and (4) the necessity of keeping each class abreast at all times in the correlated assignments of four or more subjects.

7. TEACHING STEPS AND TYPES OF LEARNING

Sequence of teaching steps under the unit-assignment plan.— More than three-fifths of the 362 schools employ the following teaching steps in the given sequence in work offered by

means of the unit assignment: (1) Introduction, (2) individual-work (or laboratory) period, (3) period of class discussion, and (4) testing period. The remaining schools prefer to add a fifth and at times a sixth step, namely, (5) reteaching and (6) retesting. In the majority of the schools, however, reteaching and retesting proceed continuously throughout the individual-work (or laboratory) period and the period of class discussion as is shown later. term occasionally preferred for the "introduction" is the "planning period." Some respondents divide the introduction into two parts, the "pretest" or "preview" and the "presentation" or "assignment." The second step is at times called a period of "directed work," a period of "supervised study," or a "laboratory" period.

Types of learning and of teaching adapted to the unit assignment.—The unit assignment is used by all schools in the "science or problem-solving type of learning; by more than two-thirds in the appreciation type; by more than a half in the pure-practice or drill type; and by slightly less than a half in the practical-arts and the language-arts type. Typically, all four teaching steps are reported in use in each type of learning and of teaching. However, about 10 per cent of the schools omit the testing period in units of the appreciation type and a few schools omit the period of class discussion

in units of the practical-arts and drill types.

A majority of respondents in this study believe that all teaching and learning situations may be classed as (1) problem-solving or science type, (2) appreciation type, or (3) drill type.

8. THE INTRODUCTORY STEP

The purpose of the introductory step.—The introductory step serves primarily to give the pupil an overview of the unit and to arouse his interest. (Table 26.) The period also serves to diagnose pupils' needs, to locate pupils needing special help, and to determine the pupils' preparation for study of the new unit. About a fourth of the schools report the use of initial tests during the introductory period. Scores made on this test are compared later with scores made

on the final mastery test and the degree of progress made by each pupil is thus known.

TABLE 26.—Purpose of the introductory step as reported by 362 schools using the unit assignment

	Purpose Percent freque	itage
1.	To give an overview or survey of the entire unit	
2.	To arouse pupil's interest	88
3.	To diagnose pupil's needs	86
4.	To locate pupils needing special help	44
5.	To determine pupil's preparation for study of the new unit	40
6.	To measure pupil's progress by comparison with score made	43
	later on a final mastery test	95

Methods used during the introductory step.-During the introductory period the teacher usually explains the purpose and general content of the new unit, questions the pupils orally, and stimulates class discussion. (Column 5, Table 27.) Other methods employed during the introductory period are listed in Table 27 in the descending order of their frequencies of use in all schools. The reader will note that the methods most frequently reported as always used (Column 4, Table 27) are methods 1, 2, 3, 5, and 6. That is, the teacher explains, to the class meeting as a group, the purpose and general content of the new unit, and by means of questions, suggestions, and explanations develops in the minds of the pupils the relation of the new unit to previously mastered ideas or facts. The least frequently employed procedure is the written pretest of the essay type, although the written, objective pretest is employed at one time or another by 61 per cent of the 362 schools. Less than half the schools-give a written test to determine whether the pupil has secured an accurate overview of the unit? Most of these repeat the introductory step for pupils who do not perform satisfactorily on the test. Frequently the unit assignment is not presented in typed or printed form. (Methods 9, 10, and 11.)

TABLE 27.—Methods used by 362 schools during the introductory step

	A. A	Per	entago	frequen	icy of
*	Method	Occa- sion- ally	Gen- eral- ly	Always	Total
	1	,	3	4	i.
1.	Class discussion. Purpose and general content of new unit made clear by the teacher.	29	23	28	80
2	Oral questioning	25	18	35	78
4	Wathods by which the moult is	30	23	23	76
7	Methods by which the pupil is to study the unit are out! ined.	29	20	20	69
6	Class meets and works as one group. Relation of new unit to previously mastered ideas or facts is developed through questions, suggestions, or explanations by the teacher.	21	12	33	66
7.	Unit is told to the class by the teacher as a grown or shatched	19	23	23	65
	by the teacher in a talk or lecture.	35	19	9	63
9.	A written objective pretest is given Assignments, units, and problems are furnished pupil in multigraphed	40	17	4	61
10.	multigraphed, mimeographed, or printed form. Assignments, units, and problems are written on the black- board to be copied by the pupil.	41	9	6	56
11.	Assignments, units, and problems are given orally by the teacher and copied by the pupil.	42	7	4	53
12	Hypotheses are advanced for the solution of problems in-	33	6	9	48
13.	Pupils are given a written test to determine the extent to	29	14	3	46
14.	which they have secured an accurate overview. Introductory step is repeated for those who do not pass the test satisfactorily.	30	9	8	42
15	A written pretest eccent type is along	27	8	8	38
	A written pretest, essay type, is given	28	5	0	33

Time required for the introductory step.—Three-fourths of the schools report that no approximately uniform proportion of the total time taken by a unit is allotted to the introductory step even for the units of a given subject. The median estimate of the remaining respondents is that 10 per cent of the total time given to a unit is allotted to the introductory step.

9. THE INDIVIDUAL-WORK (OR LABORATORY) PERIOD

Purpose of the individual-work period.— All schools report that the chief purpose of the individual-work period is mastery of the unit assignment by the individual pupil. To a fourth of the respondents mastery implies that certain adaptations in the pupil will result from his work with the materials of the unit. Other purposes occasionally mentioned are (1) the development of initiative and self-direction, and (2) the providing of opportunities for self-expression and creative achievement.

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Methods used during the individual-work period.—The individual-work period is emphatically a time of directed study. The frequent use of Methods 1, 2, 3, 4, and 5 (Table 28) shows that during the individual-work period the classroom is made a study room or laboratory wherein the pupils read references and collect data bearing upon the mastery of the unit assignment, and that during this time the teacher observes the pupil's work, points out errors, suggests better study methods, and answers questions raised by individual pupils. These five methods are also the ones most frequently reported as always used. (Column 4, Table 28.)

However, the data show that the activities of pupils during the individual-work period are by no means exclusively individual. (Methods 6, 8, 10, and 11.) Discussions are frequently held on common difficulties. Such discussions usually involve only small groups of pupils to whom the difficulty is immediate and real. The period is often one of mutual aid wherein the more successful pupils contribute to the instruction of the less successful.

TABLE 28. Methods used during the individual-work (or laboratory) period

	**	Percentage frequency of					
	Method	Occa- sion- ally	Gen- eral- ly	Always	Total		
	x °		3	4	5		
1.	Teacher answers questions raised by individual pupils Teacher observes pupil's work and points out errors	52	13	23	88		
2	Classroom is made a study room or laboratory	27	13	23	87		
4.	Teacher suggests better study methods	43	21 18	16	86 82		
5.	Pupils read references and collect data bearing on solution	- 10	10	10	04		
	of problems involved	26	29	24	79		
<u>0</u> .	Teacher directs informal discussions of common difficulties.	. 44	18	15	77		
	Pupil works on supplementary topic of his own choosing, with approval of teacher	44	44				
8.	Pupils work part of the time individually and part of the	39	25	12	76		
0	time in small groups.	35	81	0	75		
10.	Teacher gives objective tests to discover pupil progress	45	18	7	70		
11	common difficulties.	45	- 18	6	69		
12.	Capable pupils at times instruct other pupils. Pupil formulates or organizes his solution of (or work done	44	20	2	66		
	on) the problem, unit, or assignment	21	20	11	52		
14.	Each pupil works individually at all times. Teacher gives subjective or essay-type tests to discover pupil	26	18	. 6	50		
	progress	87	8	2	47		

The individual-work period is not only a time for collecting data but also a time for organizing and interpreting data. (Methods 5 and 12.)

Finally, the individual-work period is a time of occasional testing—usually by means of objective tests, sometimes by means of essay tests. The results of these tests are important helps to the teacher in judging the progress of individual

pupils and in planning remedial teaching.

Several respondents emphasize that the teacher does not answer questions raised by individual pupils (method 1, Table 28) until the pupil's own resources of time and ability have been exhausted. Also the point is often stressed that pupils do not work on elective supplementary topics (method 7, Table 28) until the minimum requirements have been met. Only the more capable pupils ever get beyond the rigid requirements of the first level. The question has already been raised whether a certain degree of option concerning work to be done might not be as wholesome for slow pupils as for their more capable fellows.

A few schools supplement the data of Table 28 as follows. Conferences and excursions are scheduled occasionally during the individual-work period. Additional teacher activities include the raising of questions, marking finished work, conferring with small groups, arranging for supplementary reports, and keeping quiet, each as the occasion seems to demand. Time is frequently given for demonstrations, by

individual pupils, of interesting results obtained.

The proportion of time given to any of the various methods employed during the individual-work period differs with the subject matter. For example, the reading of references and the collection of data (method 5, Table 28) occupies a much greater percentage of the individual-work period in social studies than in mathematics, although probably the contribution which mathematics has made to modern civilization would be more apparent to pupils if more than the usual amount of time were given to the reading of well-selected references.

Time required for the individual-work period.—More than half the schools report that no approximately uniform proportion of the total time taken by a unit is allotted to the

individual-work period even within a given subject. The median estimate of the remaining respondents is that 54 per cent of the total time given to a unit is allotted to the individual-work period. However, for pupils composing "honors" or "self-reliant" groups this proportion is often increased to as much as 90 per cent.

10. THE PERIOD OF CLASS DISCUSSION

The purpose.—Four-fifths of the respondents report two purposes for the period of class discussion-first, to give pupils a chance to interchange ideas and information gathered primarily during the individual-work period and. second, to give pupils an opportunity to correct wrong notions which they may have acquired. To three-fifths of the respondents an additional purpose of the period of class discussion is to test the pupil's ability to present previously collected and organized facts and principles in such a way as to arouse a desirable emotional attitude in his audience or to convince its intelligence of the soundness of a position Other purposes occasionally reported are: (1) To furnish an opportunity for summarization, (2) to give practice in oral discussion, (3) to give practice in speaking before an audience, (4) to socialize experience, (5) to stimulate thinking. (6) to secure additional associations through audition, (7) to fix impressions through expression, (8) to show how applications of the unit may be made, (9) to develop the main concepts of the unit through the pooling of information and experiences, and (10) to bring out additional problems and thus lead up to the study of the next unit.

Methods used.—Classroom procedure during the period of class discussion centers around floor talks and oral or written reports given by the pupils on some phase of the unit or some related supplementary topic. (Table 29.) These talks and reports are interspersed with debates or general discussions. The teacher presents additional material of interest not thought of or discovered by the class. Pupils making the best floor talks or reports are often rewarded in some schools by having their talks or reports recorded on disk records to be reproduced in other class sections or at community gatherings. The pupils are not required to defend their.

solutions of the problems involved in the unit, or to present organization outlines or briefs of the unit for criticism (methods 7 and 10, Table 29), as often as one might expect. A few teachers report that they complete this phase of the work on the unit during the individual-work period. Several respondents modify method 9 to show that summarizing the work of the class is often a cooperative function of both teacher and pupils, or of a committee of capable pupils.

Other methods frequently reported are: (1) Pupils give demonstrations or present displays of work done in connection with the unit, (2) small groups or committees offer their interpretation of the unit, (3) lectures are given by outside speakers, (4) motion pictures or stereopticon slides related to the unit are shown, and (5) excursions may be taken to acquire necessary or desirable information bearing upon the unit.

TABLE 29.—Methods used during the period of class discussion

	Method	Percentage frequency of	use
1.	Pupils give floor talks on some topic or pl	nase of the unit	81
2.	Oral reports are given on supplementary	topics	74
3.	Teacher attempts to present additional ma	aterial of interest not	
	thought of or discovered by the class		73
4.	Pupils give written reports on some topic	or phase of the unit.	70
5.	Written reports are given on supplements	ry topics	67
6.	Debates are sometimes held		65
7.	If the unit is a true problem, pupils are their respective solutions in oral dis	cussions with other	
,	pupils	the same to the latter with the state of the latter of the	62
8.	General discussions are held on particular	ly good floor talks	6Q
	Teacher summarizes the work of the class		15)
10.	If unit is not a true problem, organizati		37

Time required.—More than half of the respondents state that, of the total time allotted to the unit, no approximately uniform proportion is devoted to the period of class discussion even in the units of a given subject. The median estimate for the remaining schools is that 31 per cent of the total time allotted to the unit is given to the period of class discussion.

11. TESTS AND THE TESTING PERIOD

Purpose of tests.—Only 2 per cent of the respondents state that tests serve solely as bases for the awarding of marks. Eighty per cent state that tests are used only as a means of discovering whether pupils have mastered the unit assignment or its elements. Additional purposes occasionally mentioned are: (1) To furnish a basis for reteaching, or to determine where to concentrate review; (2) to motivate pupils, to stimulate them to organize their work, and to induce them to review; and (3) to enable the teacher to evaluate the success of her methods.

When tests are given.—The brief testing period which follows the period of class discussion is devoted exclusively to final testing for mastery. It by no means constitutes the entire testing program as the discussion so far has clearly shown. Before pupils begin work on a unit, pretests are always given in 4 per cent of the schools, are generally given in 17 per cent, and are occasionally given in 40 per cent. That is, with varying frequencies, pretests are given in 61 per cent of all schools reporting. In general, the data indicate that pupils rarely show on the pretest a degree of mastery which justifies excusing them from any considerable portion of the unit. However, pupils who are excused from work on all or on part of the unit usually work on elective supplementary projects. Sometimes, however, they assist with the instruction of other pupils, do free reading, or work on other subjects which require their time. In most schools a series of tests is given throughout the individual-work period and the period of class discussion covering the several sub-divisions of the unit; and comprehensive final examinations often covering several units are given for the purposes of review at the end of each semester.

By whom tests and examinations are prepared.—In 90 per cent of the schools the teacher prepares all tests and examinations for his or her classes, usually subject to the approval of the department head, the principal, or the supervisor. Several teachers doing work in the same subjects and grades may cooperate in the preparation of tests. In a few schools the tests are centrally prepared by the department head, the

supervisor, or members of the department of measurement or research.

Form in which tests are given.—Standardized tests are not often used to measure progress or mastery. Most schools make judicious use of subjective or essay-type tests and of oral tests. Objective tests are often used in printed or mimeographed form. A unique feature of some objective tests submitted as samples is an introductory sentence or paragraph to inform the pupil of the specific purpose of the test.

What the tests measure.—Practically all respondents believe their objective tests to measure only informational and factual materials or skills. Most teachers are relying upon supplementary techniques to enable them to judge the extent to which attitudes, habits, adaptations, and concepts are being acquired. Among these supplementary methods may be mentioned the following: (1) Close observation of pupils' conduct and reactions, (2) oral examinations, and (3) problems presented to the pupil requiring a statement of what should be done under a specific set of conditions.

12. THE UNIT ASSIGNMENT AND OTHER ASPECTS OF SCHOOL PROCEDURE

Self-corrective practice material.—Self-corrective practice materials are extensively used by only a third of the schools. These materials are most frequently employed in English grammar, spelling, composition, and mathematics.

Pupils' progress records.—A fourth of the schools report the use of a double-entry record which shows the tests to be passed and the date of passing each test. However, for the most part these schools differ in no way from traditional schools in progress records used.

The marking system.—Forty per cent of all schools reporting are using a 5-letter marking system. Next in the order of frequency is the percentage system used in about a third of the schools. Other systems infrequently mentioned include (1) 3-, 4-, 6-, or 7-letter systems, (2) letters with plus and minus signs, and (3) Roman or Arabic numerals.

Reports to parents.—Reports are usually sent home each 6 weeks although the intervals at which report cards are issued range from 4 to 12 weeks. The following items are arranged





in the order of the frequencies with which they appear on the report cards used in these schools: (1) A mark indicating the quality of the pupil's performance in each subject; (2) attendance; (3) deportment, character traits, or attitudes; (4) industry or effort; (5) amount of work done in each subject; (6) health record; (7) comments on any unusually good or poor features of the pupil's work; (8) extracurriculum work; and (9) a statement of the pupil's progress, with suggestions to parents.

Retardation and acceleration.—Reports obtained from these schools giving a distribution of the number of credits earned by all pupils enrolled indicate that during the year 1929-30 more than four-fifths of the pupils in these schools accomplished the equivalent of a normal year's work. Five per cent earned one and one-half year's credits and one-half of one per cent did the equivalent of two years' work. On the other hand, 6 per cent did but one-half year's work and about 5 per cent received no credits at all. These data suggest that the unit assignment tends to normalize the progress of all pupils by substituting enrichment for acceleration and modified assignments for retardation and failure.

Promotion.—In most of these schools no industrious, conscientious pupil in regular attendance fails of promotion, since assignments are usually differentiated to temper the task to the pupil's capacity. Many factors, such as social maturity, physical maturity, age, intelligence, and attitudes—as well as mastery of subject matter—are considered in determining whether a pupil shall pass or fail. All pupils are promoted except those who, in the teacher's opinion, based upon data from tests and careful observation, will profit more by remaining in the present grade. Trial promotions are often used in doubtful cases. In these schools the outward symbol of promotion is still the "passing" mark.

The school day.—The typical school day is 360 minutes in length, the typical number of periods is 8, and the typical length of each period is 45 minutes.

Classroom and office equipment.—Probably the most serious deficiency in classroom equipment is the absence of adequate filing devices for such materials as guide sheets, cards for

electives, tests, and pupils' completed work. About a third of the classrooms used for work on the unit-assignment plan are equipped with adequate filing devices and about a half with movable tables and chairs and an ample library of reference books. To make the guide sheet less bulky and formidable some schools use a card file carrying 3 by 5 or 4 by 6 inch cards on which the electives are outlined. The guide sheet still lists the electives and is the master sheet. However, the cards, which, may be used over and over again as any library index cards may be used, carry the details essential to proper direction of the pupils on the electives.

Adequate equipment for duplicating guide sheets seems an essential to best results with the unit assignment.

Home study.—The amount of home study expected of pupils in any of these schools differs for pupils of different capacities and for pupils enrolled in different subjects and curriculums, or in different grades. Only 10 per cent of the respondents expect no home study at all. In the remaining schools the typical expectation is 30 minutes per day in grade 7, 40 minutes in grade 8, 45 minutes in grade 9, 50 minutes in grade 10, and 60 minutes in grades 11 and 12. The reasons usually assigned for expecting more home study from the upper grades are: (1) Pupils in the upper grades have acquired more power for independent study; (2) they are physically more capable of the extra work; (3) their assignments are usually heavier; and (4) they participate more extensively in the extracurriculum program and hence have less time for study during the regular school day.

Home study is regarded most essential in the college preparatory curriculum. The work of slow pupils is frequently planned on the assumption that they will do little or no home study because of unfavorable conditions in the home.

"Supervised" and "self-reliant" pupils.—Pupils are classified as "supervised" and "self-reliant" in less than a tenth of the schools being studied intensively. Where the practice prevails, about 7 per cent of the total enrollment are classed as "self-reliant" or "honors" pupils and are permitted to ignore to a considerable extent the fixed schedule of the daily program.

Motivation under the unit assignment.—Four-fifths of the respondents believe that more pupils are motivated by true interest (doing the work for its own sake because the pupil sees it as a self-adopted goal), under the unit-assignment plan than are so motivated under the traditional plan. The opinion is generally expressed, however, that interest depends much more upon the teacher than upon the plan; that real interest is certain to be developed during the introductory period by a trained, dynamic, and intelligent teacher; but that in the hands of some teachers the unit-assignment plan may become dry and formal, defeating the social aims of education.

Questionnaires submitted by respondents to their pupils have shown invariably that pupils favor instruction on the unit-assignment plan. Phases of this satisfaction, however, are related only indirectly to interest. For instance, the unit assignment gives the pupil a clear notion of the work to be done and places upon him a definite responsibility. This appeals to most pupils, even to the lagging and indifferent, who for the most part are really willing to work if they can only discover what the teacher wants done.

The pupil's desire to compete, both with his own previous record and with the records of other pupils, is said to be greatly intensified under the unit-assignment plan, especially where progress charts are used. Many respondents insist that creative work has increased noticeably from year to year under the unit-assignment plan, and that the wise use of elective and supplementary projects is permitting many pupils to explore a wide variety of fields of special interest to them. Samples of unit assignments reproduced in Chapter VI, Part II, show how a variety of types of work may be offered by means of elective and supplementary projects.

Pupils who refuse to work under the plan.—About a fifth of the schools report that a few pupils refuse to work under the plan. However, the respondents believe such pupils would not work under any plan. One respondent says, "I suppose a teacher of 180 pupils always would have at least 10 of this kind. They are compelled to work by parental aid, instilled fear of consequences, and similar devices known and disliked by all of us." Other respondents report the usual

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efforts to motivate the pupil. That is, he may be interviewed by the classroom teacher, who may also recommend personal interviews with the principal, the home-room teacher, a counselor, or an adviser. The pupil is urged, encouraged, or given instruction in how to study as the case seems to demand. If personal interviews do not produce desired results, the pupil may be made the object of a more thorough case-study including a physical examination. If he is found to be merely indolent, pressure is applied wherever and in whatever way promises to be most effective. The cooperation of the home is secured if possible. The pupil's school day may be lengthened by required attendance at detention periods. or he may be required to attend Saturday morning classes. He may be required to attend a special half-hour period at the opening of each school day during which period he is coached in organizing his tasks for the day. He may be transferred to a lower ability group, assigned to special teachers either during or after the school day for special help, or removed from membership in the clubs and in other extracurriculum activities in order to be free to attend a special coaching or restoration period. Special efforts may be made to select more interesting tasks for him. Sometimes his program is changed to give him different subjects or different teachers. He may be placed on a denite daily assignment plan with definite work outlined and special supervision to see that it is done. Such efforts proxing unavailing he may be given a failing mark. Pupils requiring such persistent attention are far fewer in classes on the unitassignment plan than in classes on the traditional plan.

IS. FURTHER ASPECTS OF THE UNIT ASSIGNMENT

A review of terminology.—The study reported in Part II has shown that in the practices of selected secondary schools an important provision for individual differences is variously known by one or more of the following terms: (1) Differentiated assignments, (2) long-unit assignments, (3) individualized instruction, (4) the contract plan, (5) the laboratory plan, (6) the problem method, (7) the project method, (8) the Morrison plan or some modification, (9) the Dalton plan or some modification, and (10) the Winnetka technique or

some modification. The study has further shown the distinguishing characteristic of each of these plans, methods, or procedures, in actual practice to be the presentation to the pupils of the subject matter of the course by means of carefully organized unit assignments.

The inapplicability of the "Morrison plan," the "Dalton plan," and the "Winnetka technique" to the practices of the schools discussed in this portion of the report has been demonstrated in Chapters II, III, and IV of Part II. The ensuing comments may serve to establish reasons why the terms "unit" and "unit assignment" should be preferred to the other terms in current use.

- 1. The term "long-unit assignment" is undesirable since many unit assignments are and should be brief.
- 2. "Differentiated assignment" probably may be taken for granted since every good unit assignment should provide differentiated work adapted to the abilities, needs, and interests of the pupils for whom it is intended. If this assumption can not be granted then the term "differentiated unit assignment" is suggested.
- 3. The term "contract" signifying as it does "a formal agreement between two or more parties; or a piece of work to be done according to such an agreement," seems decidedly out of place in any classroom situation. On the one hand, if the school belongs in the "freedom group" where the work is done for its own sake, a formal agreement between the teacher as party of the first part and the pupil as the party of the second part presumably with school marks the chief consideration for which the party of the second part barters his time and energy is absurd. On the other hand, in the school where the pupil's work is determined by courses of study and the teacher's judgment, with reasonable but certainly not unlimited allowance for choice of electives by the pupil, the term "contract" is inappropriate since it implies not only the privilege of agreeing to do certain work but also the privilege of deciding not to do it. This latter privilege does not actually exist since much of the work must be required. Hence, under such circumstances calling the teacher's assignments "contracts" is only a game of "make-believe" not likely to be popular with pupils of high-school age.

4. The term problem method" lacks comprehensiveness. It can not apply to all types of work. It is true that unit assignments in subjects primarily of the science type may be problems or may consist of problems. But unit assignments in which the emphasis is placed upon appreciations or skills, for example, can not be stated as problems.

5. In another way "project method" also lacks comprehensiveness. Unit assignments in such fields as agriculture, home economics, and the industrial arts may often be described as projects. But not all assignments even in these fields are projects. Moreover, the term "project" in the minds of informed people will continue to suggest a learning product which is not the pupil's immediate goal but incidental to the goal to be attained.

- 6. The term "individualized instruction" emphasizes unduly one phase of teaching procedure which accompanies the use of the unit assignment. Previous chapters have shown that instruction by means of the unit assignment is more than individualized. In schools where outstanding success is being achieved with the unit assignment much use is made of class and group conferences and discussions as well as of the audience situation which obtains when reports are given or demonstrations are made.
- 7. Finally, the term "laboratory plan" also concentrates attention too exclusively upon the individualized or directed-study phase of classroom work with the unit assignment. Like the term "individualized instruction" it is limited in its connotation to what is frequently known as the individual-work period.

In the writer's opinion the terms "unit" and "unit assignment" are comprehensive and likely to suggest the essentially new developments under consideration better than other terms in current use.

The value of the unit assignment.—No provision now being made in the secondary schools for the individual differences of pupils offers greater promise than the unit assignment. If the unit assignment did no more than place the emphasis on the activity of the pupil in the classroom instead of the activ-

For further discussion see sec. 1, Ch. VI, Part II, and Billett, Roy O. Plans Characterized by the Unit Assignment. School Review, 40:653-668, November, 1932.

ity of the teacher it would justify its existence. Pupils clearly prefer the unit assignment to the traditional classroom work which is important if the pupil's emotional set toward his tasks be regarded as significant. The unit assignment is the basis of remedial work and of work with slow pupils. It affords interesting challenges to bright pupils. It is the key to differentiated content and teaching procedure whether classes are homogeneous or heterogeneous.

A fundamental unsolved problem.—Therefore, the unit assignment, as an instrument for presenting the curriculum to the pupil, holds a unique and important position in any plan to provide for individual differences. However, at present, unit assignments must be built from traditional subject matter. The possibilities of the unit assignment will not be fully realized until a fundamental problem has been solved, namely, the validation and grade placement of the subject matter of which the units should be composed. The bestmanned research departments of our largest cities are only beginning to attack the problem in any adequate way. In solving this problem the following related questions must be answered better than they have so far been answered anywhere:

1. What do the subject-matter specialists regard as the real contributions which study of their subject matter may make to the growth of the individual? How may these contributions be classified under the headings of concepts, attitudes, appreciations, knowledges, or skills.

2. How are these concepts, attitudes, appreciations, knowledges, or skills ranked by capable adults who are not subject-matter specialists, from the standpoint of their importance; their range of use; the difficulty of acquiring them; the desirability of acquiring them in certain subject-matter fields rather than others or even entirely outside the school?

3. To what extent may principles of differentiation and adaptation of subject matter be obtained from the analysis and interpretation of psychological studies reported in educational literature, of studies of children's present needs and immediate interests to be made through interviews with the children themselves and through observation of their present normal activities, and of studies of probable adult needs?

4. Do these studies suggest a certain organization and sequence of subject matter which will be most consistent with the pupil's normal processes of growth?

5. What minimum essentials should be required of all pupils and to what extent is it necessary to retard the progress of the slower pupils in order that thorough mastery may be assured?

- 6. What should be the content and method of honors courses in each grade for the very capable or gifted, of courses for the superior but not gifted, and of courses for the normal pupil?
- 7. How can tests be developed, the passing of which will constitute entirely adequate grounds for excusing pupils from certain phases of a course or even from certain courses?
- 8. How can the work of all subject-matter fields be correlated and integrated?
- 9. How can the products of learning be adequately and economically measured?

14. SUMMARY

The unit assignment is being used widely in every State. It is used more extensively in large schools than in small, and decidedly more in the reorganized than in the unreorganized schools.

In schools selected for intensive study the widest diversity of nomenclature exists, regardless of size of school, type of organization, or geographical location.

The offerings of schools using any of the plans characterized by the unit assignment are expressed in terms of the usual subject-matter fields subdivided into the usual required and elective courses. The usual number of units defined in the usual way is required for graduation. Respondents from schools using the problem method define problem in precisely the same way that respondents from schools using the project method define project.

A systematic intercomparison of the responses made by seven groups of schools to 641 items covering in detail 37 criteria, shows that in practice differentiated assignments, long-unit assignments, individualized instruction, contract plan, laboratory plan, problem method, and project method



are essentially one and the same thing. Because of their essential identity the seven groups of schools were combined and their practices reported in detail.

In schools using the unit assignment a given course is broken up into major allotments or assignments. Fourteen different terms are used by different schools as names for these major allotments. Of these 14, "unit" is the most frequently used and "assignment" next most frequently used. The term "unit assignment" was selected as most appropriate.

The median number of years during which the unit assignment has been in use increases regularly from the smallest to the largest enrollment groups.

From about a fourth to about four-fifths of the offerings in the several subject-matter fields are presented by means of the unit assignment. Social studies rank first and physical education last.

The unit assignment is generally broken up into smaller problems or elements. Tentative time allotments are usually set for the completion of each element and each assignment. The time allotment varies, however, from unit to unit, and from element to element. The unit assignment is differentiated, usually, for different ability levels.

Many difficulties are encountered in planning, revising, and correlating unit assignments. The chief difficulty is lack of time of teachers due to heavy teaching, administrative, or extracurriculum duties.

The following teaching steps are used in work offered on the unit-assignment plan, in the sequence indicated: (1) Introduction, (2) individual-work (or laboratory) period, (3) period of class discussion, and (4) testing period. To these steps many schools add reteaching and retesting.

CHAPTER VI : SPECIMEN UNITS AND UNIT ASSIGNMENTS

1. PRELIMINARY STATEMENTS

Purpose of the chapter.—The materials of this chapter are intended to illustrate best practice in the secondary schools in the building of units and unit assignments. For obvious reasons no attempt has been made to present a series of validated teaching or learning units in each of the various subjects now offered in the secondary schools. In the first place no such series exists, and if it did exist a separate volume would be required to set forth the units and the corresponding unit assignments for each subject. The available space seems most profitably occupied by a few outstanding examples of efforts put forth by teachers in service to develop better teaching and learning units and corresponding unit assignments. Probably the alert and intelligent teacher will receive suggestions for creative work in his field even though the materials offered for the most part are drawn from subject-matter fields other than his own. The chapter can have little value as a source of ready-made units and unit assignments. It may prove valuable as a source of ideas and techniques.

Relation of the unit to the unit assignment.—In scanning the contents of this chapter the reader should maintain a clear-cut distinction between the unit and the unit assignment. The unit is best regarded as a concept, attitude, appreciation, knowledge, or skill to be acquired by the pupil, which, if acquired, presumably will modify his thinking or his other behavior in a desirable way. So long as units are derived empirically they will continue to be relative rather than fixed entities, varying both in importance and magnitude when determined by different teachers.

Moreover, different sequences will be preferred by different teachers. Obviously, the sequence of the series of units which compose a given course is of primary importance.

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As intimated at the close of Chapter V, Part II, the determination of valid units and their proper sequence for each course to be offered in the secondary school, is one of the outstanding challenges to educational research.

The unit assignment, on the other hand, consists of the suggested or required activities and experiences planned by the teacher to enable the pupil to master the unit; that is, to enable the pupil to acquire the desired concept, attitude, appreciation, knowledge, or skill. The unit assignment should be differentiated to take into account such factors as the abilities, interests, needs, previous experiences, and immediate environment of the pupils for whom it is planned. The contents of the unit assignment (in mimeographed or printed form known as a guide sheet) vary greatly from one subject to another, consisting of an organized arrangement of such items as the following: Questions; problems; reading references; experiments to be performed; vocabulary lists to be mastered; terms to be defined; topics for discussions, floor talks, dramatizations, or demonstrations; and a wide variety of related elective problems and projects. sec. 6, Ch. V, Pt. II.) In English, social studies, and science the unit assignment may be regarded as in the elementary stages of its pessible evolution if it consists only of a reference to certain pages in the text and a few questions as aids to study. However, in subjects like typing, shorthand, foreign language, and mathematics such an assignment seems to represent an advanced stage in the possible evolution of assignments. This paradox follows from the fact that in the group of subjects of which English, social studies, and science are typical, the teacher tends to rely less upon a single text (probably because no one text seems to contain all the desired units or objectives) and where to recognize several alternative procedures by means of which the unit may be mastered. On the other hand, in subjects like typing, shorthand, foreign language, and mathematics, the teacher tends to rely upon a single text. The accepted units and their sequence are rather rigidly determined for the teacher. Moreover, the texts to a large extent are themselves guide sheets suggesting the activities and experiences by means of which the unit may be mastered. Consequently in such subjects the unit

assignment prepared by the teacher is supplementary to the unit assignment already contained in the text, and tends to be brief. To make it long is merely to duplicate textual material.

The unit assignments of section 2 of this chapter are chiefly characterized by their brevity. The assignments reproduced in section 3 are longer than those in section 2, are differentiated, and are organized around empirical point systems which furnish a basis for the awarding of marks. In section 4 each unit assignment is accompanied by a clear-cut statement of the unit. Consequently the reader has a much better basis for judging the probable value of the accompanying unit assignment than he has in the case of any unit assignment presented in the earlier sections. In other words, the value of the proposed pupil activities may be better judged when the goal or objective toward which these activities are directed is clearly stated.

2, BRIEF UNIT ASSIGNMENTS USUALLY CLOSELY PARALLELING A TEXT

Brief but adequate guide sheets.—The following four unit assignments submitted from the South Philadelphia High School for Girls illustrate how brief a guide sheet may be in certain subject-matter fields and yet be adequate because the text carries a series of units satisfactory to the teacher and supplies for the most part adequate stimuli to pupil activity. In such subjects the guide sheets are valuable because they supply occasional needed supplementary stimuli and make possible such changes in the sequence of units as the teacher may desire. These assignments may be significant for teachers who have failed to/see where the unit assignment could be of use in their abjects. Generally such teachers have thought of assignments in terms of the more elaborate unit assignments which appear to have found a place in many phases of English, social studies, and science.

Stenography (Grade 11B).—Time, one week. Text: Phonographic Amanuensis. Lessons 47 and 48—halved strokes with circles and loops. Practice letters 35 and 36. Letter 37 is optional. Study, page 9—list of commonest words.

Typestriling (Grade 11A).—Time, one week. Text: Fuller, The Typist. Practice drills as assigned by your teacher for rhythm and con-



centration. Continue to write a line of your errors on the practice paper. Lesson 11, page 35. Read very carefully Part I of this lesson. Where are the ¢ and @ signs. How else may the ¢ sign be made? Type three perfect lines of drills 190 and 191, and three perfect copies of paragraphs 192 and 193. Use 11-inch paper. Concentrate. Aim for perfection the first time. Do not hurry. Do not waste time. Keep the machine going.

Latin (Grade 10A).—Time, two weeks. Text: Sanford and Scott, A Junior Latin Reader. First week—translate Cæsar, chapters 27-29. Lesson XVI. Prepare 87 for oral translation. In 88, write 3-5. A written test, May 22. Second week—translate Cæsar, chapters 30-32. Lesson XVIII. Prepare 98 for oral translation. In 99, write 1-3.

Algebra I.—Time, one week. Texts: Durell and Arnold, First Book in Algebra; Schorling-Clark, Modern Algebra; Schorling-Clark-Lindell, Instructional Tests in Algebra. Fractions (all work in Durell and Arnold).

- Study, page 160. Note that fractions in algebra in general have the same properties as fractions in arithmetic. Transformations of fractions.
- 2. Reduction of fractions to lowest terms. In exercises 86 and 87, pages 161, 162, work the odd-numbered problems.
- 3. Reduction of an improper fraction to a mixed number. Study page 163 and work examples 2, 4, 5, 7, 10, 12, 14, 16, 20, and 22 in exercise 88.
- Reduction of a mixed expression to a fraction. Study, page 164 and work examples 6, 9, 11, 14, 19, and 20 in exercise 89.
- 5. Do you remember how to do addition, subtraction, multiplication, and division of whole numbers? Test yourself by working example 14, page 44; example 37, page 48; example 30, page 82; example 33, page 82; example 20, page 87. Work examples 28 and 33, page 19.
- Maximum assignment: Study pages 176 and 177, Part II.
 Work examples 1-3, page 178; examples 1-3, page 180; examples 16-18, page 180.

Industrial arts highly individualized.—The highly individualized nature of school work in such fields as industrial arts, household arts, the fine arts, and mechanical drawing favors the development of brief and definite unit assignments. Much direction of pupil effort in these fields is given orally, though the following specimen assignment in automobile mechanics makes use of texts for guiding part of the pupil's activity. The assignment consists merely of a unit stated as "General engine work" which is subdivided into a series of component jobs or operations. Text books or reference books are listed and the pupil is referred to these by means

of code letters at the right of each job or operation. The unit assignment on "Telegraphy," however, makes no use of text books and consists of three phases: (1) A problem; (2) directions for solving the problem, not so detailed as to eliminate thinking on the part of the pupil; and (3) thought questions. Illustrations, which can not be reproduced here, are used freely in the guide-sheets.

Automobile mechanics. Unit: "General engine work." Time, variable. Texts: Kuns, Ray F., pages 102-261; Wright, J. C., pages 117-180, 269-324, 340-344; Dykes, pages 30-174, 727-837; I. C. S. on "Engine work."

Jobs or operations

- 1. Grinding and adjusting valves. W. K.
- 2. Reseating and refacing valves. W.
- 3. Installing oversize valves. W.
- 4. Replacing valve-lifter guides. W.
- 5. Adjusting main bearings. W. K.
- 6. Adjusting connecting-rod bearings. W.
- 7. Fitting new connecting-rod bearings. W.
- 8. Fitting new main bearings. W. K.
- 9. Fitting new piston rings. W. K.
- 10. Repairing out-of-round cylinders. W.
- 11. Fitting new wrist pins and bushings. W. K.
- 12. Replacing cam-shaft bushing. W.
- 13. Removing cam-shaft end play. W.
- 14. Scraping carbon. W. K.
- 15. Burning carbon. W.
- 16. Cutting and fitting gaskets. W.
- 17. Replacing head gaskets. W.
- 18. Replacing manifold gaskets. W.
- 19. Scraping main engine bearing. K.
- 20. Polishing a crank shaft. K.
- 21. Fitting main engine or crank-shaft bearing on a Ford engine. K.
- 22. Removing engine from Ford car. K.
- 23. Adjusting connecting-rod bearing on Ford engine. K.
- 24. Timing engine. K.
- 25. Silent chain care. K.
- 26. Removing a cylinder head. K.
- 27. Replacing a cylinder head. K.
- 28. Shellacing a cylinder head to prevent compression leaks.
- 29. Fitting new pistons. K.

¹ This unit is one of many submitted from the Bayonne Vocational School, Bayonne, N. J.

Telegraphy² (Assignment No. 3). Problem.—"To connect up a 2-station full-metallic line."

Directions:

- Draw a neat diagram of the circuit showing all parts. Use only one battery. Have diagram approved by the instructor.
- Make a list of material for one station and have it approved by the instructor.
- 3. On this job two pupils will work together in connecting up their stations. Locate the instruments at the extreme ends of the shop. Each pupil must set up his own station.
- 4. Test out the circuit and establish communication with your partner. When satisfied with your job have it inspected.

Questions:

- 1. What effect does it have on your hook-up when your partner leaves his key open?
- 2. Is the telegraph circuit open or closed when not in use?
- 3. What kind of batteries are used for telegraph work?
- 4. Why not use dry cells?
- 5. What other job which you have completed used the same connection?

History.—Brief unit assignments in English, social studies, and science are not the rule. The following assignment in history consists of a reference to a number of pages of textual material and a few questions to guide the pupil's study. It is a good example of the unit assignment in social studies as prepared by a teacher just beginning to experiment with a teaching plan characterized by the unit assignment.

Assignment 50, pages 402-409. What were the various plans for reconstruction? Give the provisions of the reconstruction act of 1857. Discuss the problems associated with President Johnson. Do you think Lincoln would have been able to avoid the evils of reconstruction? Why?

S. DIFFERENTIATED UNIT ASSIGNMENTS AND EMPIRICAL POINT SYSTEMS

Common characteristics.—The four units reproduced in this section have several common characteristics. Each provides a considerable amount of optional related work; each recognizes various levels of accomplishment both qualitative and quantitative; and each employs an empirical

One of many unit assignments submitted from the vocational department of the Community High School, Granite City, Ill.

point system as a basis for gauging accomplishment and awarding marks.

Geometry.—The following unit in geometry was submitted from the East St. Louis Senior High School, East St. Louis, Ill. The unit consists of (1) work required of everyone and (2) optional projects called "practical pupil opportunities." The work required of everyone is based exclusively on the textbook. A point system controls the awarding of marks as follows: For a passing mark, 85 points are required; for a mark of "C," 95 points; for a mark of "B," 110 points; for a mark of "A," 130 points. The maximum number of points which may be awarded for each item is indicated at the right of the item.

I. Required of everybody:	Points
A. Construct carefully and accurately 3 difference of the constructions for proposition	ns 22-28, in-
clusive	
B. Study page 164 carefully. Write out the prositions 30 and 31	
C. Draw diagrams and answer each of the 6 page 167. Give an exact description of the it is, where it is, and a brief reason why years.	e locus; what our answer is
true	
D. Following instructions given by the teacher ercises 1-9, pages 167-169	
E. Study intersection of loci. Draw figures for the exercises on pages 169-170 and tell what	or any 10 of
in each case. Discuss the limitations of the	
Total maximum points for required work	65

The following optional work will be evaluated by pupil committees. Excellent presentations will be given the maximum allowance. Pupils will recognize an opportunity to do original and worth while tasks in line with their own interests. Points will be awarded according to quantity and quality.

II. Pra	ctical pupil opportunities:	ints
A.	History.—Prepare an interesting historical account of fundamental constructions and important propositions which you have studied to date. See footnotes in texts and histories of mathematics in the school and public libraries as sources of information. Present your report in essay form or orally to the class	30
В.	Biography.—Prepare interesting accounts of the lives of several men whose discoveries you have studied so far in geometry. Present either a written or oral report.	30
С.	Art and design.—Construct two full-page sets of drawings of beautiful church windows to be found in or near the city. Leave all construction work on 1 set of drawings. Paint or color the other set to look as much like the window as possible.	30
D.	Arl and design.—Construct two full-page sets of drawings of geometric designs in wall paper, linoleums, or tilings. Leave all construction work on one set. Paint or color the other set to look as much like the original article as possible.	30
E.	. Arches.—Prepare a set of drawings of types of arches found nearby. Leave all construction lines on drawings, though more lightly drawn than the main features	30
F.	Architecture.—Prepare a set of drawings of any of the following architectural features. Leave construction lines as directed in "E," above: Doors, windows, doorways, bridges, towers, beliries, domes, fences, masonry, fireplaces, or formal gardens	30
G.	. Music.—Write an illustrated essay on some such topic as the following: "The mathematical basis of music"; "What mathematics means to the musician"; "Music's debt to mathematics"	30
Н	. Essay based on readings.—Read the chapter on mathematics in Black's Paths to Success. You will find the book in the school library. Write an essay in which you include your answers to the questions given at the	
1	end of the chapter. Trade-marks.—Prepare a set of geometric trade-marks, stating in each case the company or product represented. Show all construction lines lightly. A duplicate set in	25
J	colors may be prepared	30
**	struction as possible	30
K	. Commercial designing.—Prepare a set of original linoleum or wall-paper designs for entry in a contest	30

II. I	Practical pupil opportunities Continued. Points
	L. Cover designing.—Prepare a set of book covers for your geometry book and your notebook
	M. Illustrated chart.—Prepare a neat and original chart showing the uses of geometry and mathematics. Ask your teacher for suggestions
	N. Construction.—Points will be awarded for the construction involved in solving the originals which are listed in the book. Approximately two points will be allotted for each construction of average difficulty.
	O. Mechanical drawing.—Make a chart showing the relationship of geometry to mechanical drawing.
	P. Mechanical drawing.—Write an illustrated essay showing the relationship of geometry to mechanical drawing.
	Q. Mechanics.—By chart or illustrated essay show the relationship of geometry to mechanics.
	R. Other projects.—If you have other ideas or interests, suggest some other project to the teacher. If it is in keeping with the

English—The Sketch Book.—The following unit assignment was submitted from the Aspinwall High School, Pittsburgh, Pa. Fifteen points are required for a passing mark; 20 points for a mark of R: and 25 points for a mark of A.

a maximum number of points to be allowed for it.

purpose of this unit the teacher will approve it and assign

101 a mark of be, and 20 points for a mark of A.	
I. Required of all:	Number of
A. Reading of the following sketches:	points
1. Rip Van Winkle	1
2. Legend of Sleepy Hollow	1
3. The Spectre Bridegroom	1
4. The Author's Account of Himself	1
5. The Voyage	1
6. Rural Life in England	1
7. The Country Church	
8. The Stage Coach	
9. Christmas Day	1
10. Westminster Abbey	1
11. Stratford-on-Avon	1
12. Biography	1
Subtotal	
B. Earning passing mark on daily quisses	
C. Earning passing mark on test	
P. Listing the best descriptive, narrative, and charac	
tion passages	5, 1
'Total	15

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11.		llowing special assignments:
	A	Make an outline biography of the author 2
	B	Write an essay on the character and personality of Wash-
	D.	ington Irving2
	C	Write an essay on the charm of travel in America 2
		Write an essay on Christmas spirit in Pittsburgh 2
		Write an essay on travelling by motor coach or airplane. 2
		Write an essay comparing rural life in England and America
	G.	Give an oral report on one of the parallel readings listed below2
	H.	Write a theme on English dress and customs in Irving's time. 2
		Write a theme on American dress and customs in Knick- erbocker's time2
		Make a colored drawing of Rip, of the schoolmaster, or of the bridegroom
	K.	Write a character sketch of Dame Van Winkle, Brom, Katrina, or Squire Bracebridge
	T.	Dramatize Rip Van Winkle
		Any other project or problem approved by the teacher. Points to be determined.
III	Pa	rallel readings. (Select one.)
		Addison, Spectator, Paper No. 1.
	B.	Franklin, Autobiography, Voyage to England.
		Dickens, American Notes, chapters 1 and 2.
	D.	Stevenson, Amateur Emigrant, Voyage to America.
		Stevenson, The Wrecker, chapter 12.
	F.	Dickens, Martin Chuszlewit, chapter 15 or chapter 36.
	G.	Conrad, Typhoon.
		Tennyson, Enoch Arden.
	I.	Addison, Sir Roger de Coverley at Church.
		Dickens, Christmas Carol.
		Dickens, Pickwick Papers, chapters 28 and 29.
		Hughes, Tom Brown's School Days, chapter 4.

English—The Lady of the Lake.—The following differentiated unit assignment has been developed and used in the Alice L. Phillips Junior High School, Wellesley Hills, Mass. The D assignment is prescribed for all. Portions of the C assignment are prescribed but a certain amount of optional work is introduced (II C). All additional work for marks of B or A may be selected from the extensive list of "suggestions for additional credit." Inspection of this assignment and of two others in use in the same school shows that under suggestions for additional credit may be found

varied opportunities for creative work in: Writing original plays, essays, dialogues, stories, or poems; making original drawings in oil, water colors, ink, or crayon; modelling; editing; preparing booklets illustrating the story; dramatizing; preparing anthologies; making oral reports; or completing any original project suggested by the pupil and approved by the teacher. As a result of this wide variety of choice, under a good teacher a live class should assemble a wealth of material which should contribute to their understanding and enjoyment of the unit.

I. D assignment:

- Write in outline form a summary of the important events in each canto.
- B. Identify the characters by writing a descriptive sentence about each.
- C. Paraphrase the passages indicated in this outline.
- D. Identify places of interest listed in this outline.
- II. C assignment. In addition to the D assignment:
 - A. Write a short account of Scott's life, giving a few especially interesting facts.
 - B. Memorise and repeat before the class 20 lines from the poem.
 - C. Choose two credit points from the suggestions for additional credit listed below.
- D. Give meanings of a list of words which will be supplied you.

 III. B assignment. In addition to the D and the C assignments earn three credit points selected from the suggestions for additional credit.
- IV. A assignment. In addition to the D, C, and B assignments earn three credit points selected from the suggestions for additional credit.
- V. Suggestions for additional credit:
 - A. One credit point-
 - 1. Write a description of a hunt.
 - Draw a map of the lake region, locating important lakes, mountains, villages, and Trossachs. (Two points, if drawn to scale and colored.)
 - Sketch, in colors or ink, a Scotch mountaineer in "better plaid and tartan hose."
 - Write a character study of James V of Scotland based on the poem.
 - Trace on a map the progress of the Fiery Cross through the districts of lakes and mountains.
 - Prepare a written special report. (Two points if report is given orally before the class.)
 - Draw a diagram of the trail of the stag pursued by the hounds.

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- V. Suggestions for additional credit—Continued.
 - A. One credit point-Continued.
 - A paper entitled "Something about animals," based on the poem.
 - B. Two credit points-
 - 1. Prepare a "Lady of the Lake" booklet.
 - 2. Prepare an illustrated paper entitled "Scotch plaids and the clans which they represent."
 - Take the part of an important character in a dramatization.
 - 4. See V A-2.
 - 5. See V A-6.
 - C. Amount of credit to be determined-
 - 1. Write a comparison of Roderick and Malcolm.
 - Edit a collection of short poems about Scotland and the Scotch people by Scotch writers.
 - 3. A project suggested by yourself and approved by the teacher.

Elementary economics.—The unit assignment on "International trade," given below, illustrates the plan in use in elementary economics in the Eugene High School, Eugene, Oreg. The unit assignment is differentiated into four levels corresponding to the four points of the marking system, 1, 2, 3, and 4, respectively, 1 being the highest mark and 4 the lowest passing mark. The assignment is presented to the pupil in four parts: (1) A reading assignment, (2) a vocabulary of economic terms to be defined, (3) a series of problems, and (4) a list of projects for extra credit. For the unit on "International trade" these are as follows:

- I. Reading assignment.—Thompson, pages 261-276; Fay, pages 357-393.
- II. Vocabulary of economic terms:
 - A. Imports; exports.
 - B. Bill of exchange.
 - C. Bill of lading.
 - D. Par of exchange.
 - E. Gold points.
 - F. Favorable balance of trade.
 - G. Unfavorable balance of trade.
 - H. True balance of trade.
 - I. Visible items of trade.
 - J. Invisible items of trade.

- K. Law of comparative costs.
- L. Absolute advantage (Fay).
- M. Comparative advantage (Fay).
- N. Law of reciprocity.
- O. Rate of exchange.
- P. Sterling exchange.
- Q. French exchange.
- R. Dollar exchange.
- 8. Traveler's cheques.
- T. Letter of credit.

III. Problems:

- A. What is the essential difference between domestic trade and foreign trade?
- B. What causes the rates of exchange to fluctuate?
- C. How are these rates restricted by the gold points?
- D. Show that "the workers in a shoe factory in reality exchange a day's labor for a day's labor of workers in other occupations."
- E. List two visible items of international trade.
- F. List five invisible items of international trade.
- G. Under what circumstances might the United States continue to import cotton from China even though we could produce it more cheaply here?
- H. Show that "International payments are made by credit instruments as long as they last. Gold flows only as a last resort."

Explain whether each of the following tends to increase or to decrease imports of goods into the United States—

- I. Foreign travel by Americans.
- J. Travel in America by foreigners.
- K. Payment of the interest on the war debt by Europe to the United States.
- L. Shipping American goods in foreign ships.
- M. Gold imports from Europe.

If our imports from England exceed our exports to that country show how such a condition is likely to affect—

- N. The rate of sterling exchange in New York.
- O. Prices in the United States. In England.
- P. Probable future trade movements.
- Q. Profits of exporters. Of importers.

Show how the gold points on sterling exchange would be affected by-

- R. A change from 5 to 4 per cent in the interest rates in the United States.
- 8. Improvements in shipbuilding.
- T. Establishing airplane traffic between the United States and England.

IV. Projects for extra credit:

- A. Written problems.—The pupil may work out additional credits by writing out problems above the minimum requirement.
- B. Current events notebook.—Three points will be awarded for each event listed and accompanied by a statement which explains the economic principles involved. A maximum of 100 points per week may be earned by this project.
- C. Digest of major articles from periodical literature.—Fifteen points will be awarded for each major article read and digested in written form. The article must deal with the unit under consideration.



The relation of the work done on the unit assignment to the marking system is shown in "Requirements for the various assigned marks." It should be noted that the pupil may earn a mark of A on the unit if he passes the unit test with an A mark and receives A on his "general report" of the unit. No supplementary work is required. A second significant fact is that the "general report" is intended to reveal an "organized understanding" of the unit. A third fact to be noted is that varying degrees of mastery are recognized both on the test and on the general report.

The materials listed under "I. The Unit" are for the teacher's, not the pupil's use. They establish the goals toward which the pupil's activities are to be directed. Without such goals the pupil's learning must be largely fortuitous and accidental.

I. The unit:

- A. Major conception.—Burning and other forms of oxidation are chemical reactions in which oxygen combines with some other substance to form a new substance known as an oxide. Heat is always produced.
- B. Minor conceptions .-
 - Fire has played an important rôle in the development of mankind.
 - (a) There are four stages in man's control and use
 - (b) Fire plays some part in nearly every physical convenience which we have.
 - 2. There must be very definite conditions for burning.
 - (a) The substance must be combustible, i. e., something with which oxygen will combine.
 - (b) The substance must be in contact with oxygen which is a colorless, odorless, noncombustible gas.
 - (c) Its temperature must be raised to the kindling point, a point at which oxygen combines rapidly enough to produce perceptible heat and light.
 - 3. The products of burning or oxidation are oxides.
 - (a) Their weight equals the weight of the substance burned plus the weight of the oxygen used.
 - (b) Some are solid, some liquid, some gaseous.
 - (c) Some are soluble, others insoluble.
 - (d) Those which are soluble form acids on going into solution.

- I. The unit-Continued,
 - B. Minor conceptions-Continued.

4. Fire was believed by the early chemists to be an element and burning a "flowing out" process.

- (a) The true nature of burning was not discovered until the scales were used in quantitative experimentation. At this point modern chemistry began.
- (b) Priestley and Layoisier solved the problem.
- 5. There are many manifestations of oxidation other than ordinary burning.
 - (a) Rusting is slow oxidation which takes place at a temperature below the kindling point. The same total amount of heat is produced as in the case of burning.
 - (b) Animal heat is produced by alow oxidation of the carbon content of the assimilated food.
 - (c) Spontaneous combustion results when conditions are such that heat from slow oxidation raises the substance to the kindling point.
 - (d) A finely divided combustible substance when mixed with oxygen and raised to the kindling point produces explosive burning.
- 6. Oxidation may be stopped by removing any one of the three conditions for burning, namely, combustible material, oxygen, or kindling temperature.
 - (a) Water eliminates oxygen and cools the surface below the kindling temperature.
 - (b) Most chemical fire extinguishers generate carbon dioxide gas which is heavy, noncombustible, and a nonsupporter of combustion.
 - (c) Some extinguishers use a very volatile noncombustible and noninflammable liquid.
 - (d) Rusting is prevented by covering the substance with a protective coating which resists the action of moisture, oxygen, or other corrosive gases.
- Oxides may be changed back to the original substance by an action known as reduction.
 - (a) A substance used as a reducing agent combines with the oxygen of the oxide, replacing the original substance.
 - (b) With reduction there must always be oxidation.
- II. The assignment:
 - Problem 1. What is the origin and importance of the use of fire?
 - (a) The Story of Fire, Prometheus, pages 1-22.
 - (b) Implications of Fire, Prometheus, pages 23-29.

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- II. The assignment—Continued.
 - Problem 2. What are the chemical conditions required for burning?
 - (a) Experiments—
 - (1) Place a piece of charcoal about the size of a bean and a similar piece of slate in an iron spoon and heat for about five minutes. Repeat for the same length of time in a porcelain crucible with cover on. Make a parallel record of all observations in your notes.
 - (2) Carefully weigh 5 grams of powdered iron in the crucible. Heat, first gently for about a minute, then intensely. Keep the iron stirred loosely with the handle of the deflagrating spoon while heating until the iron ceases to glow. While the action is going on note the effect of blowing the iron gently as you would blow a fire to make it burn. Weigh carefully again. Record your results in a tabular form similar to that at the bottom of page 11 of your test. Compare the color of the remaining substance with the original iron. Test it with a magnet.
 - Repeat the above experiment using 1 gram of powdered sine carefully weighed in an iron spoon. Exercise care not to lose any of the materials before final weighing.
 - (b) Demonstration—
 - (1) One member of class to volunteer and demonstrate B and C, paragraph 26, page 24, Figure
 - (c) Readings-
 - (1) The Slice of Toast, Fabre, pages 26-41.
 - (2) Air and Combustion, Fabre, pages 211-223.
 - Problem 3. What is the nature of the products of burning or oxidation? (Assigned readings, experiments, and demonstrations as above.)
 - Problem 4. How was the true nature of burning discovered? (Assigned readings.)
 - Problem 5. What is the nature of the effects of slow oxidation as (1) rusting; (2) animal heat; (3) spontaneous combustion? (Assigned readings, experiments, and demonstrations.)
 - Problem 6. How may exidation be prevented and exides reduced?

 (Assigned readings and experiments.)
- III. Related activities:
 - A. Exhibits-

- Points
- Exhibit material mounted on a board to show the effectiveness of a number of protective coatings.
- 2. Exhibit showing results of laboratory experiments _ 15
- 3. Exhibit of materials used for protective coatings __ 20

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II.	Related activities—Continued.	
	B. Posters—	
		20
	2. Poster showing the advance made between the	
		20
	C. Scrapbook—	
	1. Newspaper and magazine articles and pictures related to fire, explosions, corrosion, and other	0.5
		25
	D. Graphs—	
		20
	2. Bar graph showing the estimated losses due to	
	rust over a number of years	20
	(Consult the World Almanac for facts.)	
	E. Advertisements.—Write an advertisement for—	
	1. A paint.	
	2. A lacquer.	
	3. Some metallic coating.	
	4. A fire extinguisher.	
	C. Dualinas svoca	
	F. Slogans—	10
	1. For fire prevention	10
4	2. To safeguard against spontaneous combustion 3. Advocating use of protective coatings	10
	4. For prevention of dust explosions	10
	(If the slogan is accompanied by a picture it will receive the added credit of a poster.)	19
	G. "Anticdotes" and other "dotes"—	
	1. Jokes, personal or otherwise relating to chemistry, the laboratory, or the classroom. Jokes must	
	be either new or old ones made new. Each	5
	2. Limericks	5
	3. Poems of not fewer than 20 lines	10
	4. A short play or dialogue	15
	(1) Conversation between a phlogistonist and a modern chemist.	
	(2) Simple play involving two primitive men with fire.	
	(3) A conversation between Priestley and	
	Lavoisier. (Must give a lesson in chemistry to receive credit.)	
	H. Portrails—	
	1. Lavoisier	20
	2. Priestley	20
	(Portraits must be about 10 inches in length and must be accompanied by a brief sketch of the man's accomplishments in chemistry.)	20
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III.	Related	activities-Continued.	
***	TOOMSOOT	MONATMEN COUNTINGER	

I. Original contribution.—Any original contribution not suggested

here will receive credit according to merit.

IV. Requirements for the various assigned marks. The total number of credit points which you earn will determine your mark on the unit. For a mark of A you must have 130 points; for a mark of B, 110 points; for a mark of C, 90 points; for a mark of D, 70 points. Credit may be earned as follows:

3 TO THE MAN TO THE TANK THE TOTAL THE TANK THE	
Pol	ints
A. The unit lest.—(Consisting of 130 true-false statements and	
20 completion questions.)	
1. For a mark of A on the unit test	70
2. For a mark of B on the unit test	60
3 For a mark of C on the unit test	57
A Tomas Mark of Continuount vest	50
4. For a mark of D on the unit test	40
B. A general report on the unit of from 300-600 words. The	
report will be marked on the degree to which it shows	
organized understanding of the unit	
1. For a mark of A on the report.	60
2. For a mark of B on the report	50
3. For a mark of C on the report	40
4. For a mark of D on the report	30
C. Points for related activities as indicated above	00
	A. The unit test.—(Consisting of 130 true-false statements and 20 completion questions.) 1. For a mark of A on the unit test. 2. For a mark of B on the unit test. 3. For a mark of C on the unit test. 4. For a mark of D on the unit test. B. A general report on the unit of from 300-600 words. The report will be marked on the degree to which it shows organized understanding of the unit. 1. For a mark of A on the report. 2. For a mark of B on the report. 3. For a mark of C on the report.

Another approach to a chemistry unit.—A year's course in general chemistry in the Lincoln High School, Midland, Pa., consists of the following units:3 1. Water nature's most common compound. 2. The blocks for the chemical building. 3. Using the chemical language. 4. How the chemical blocks act. 5. Acids, bases, and salts. 6. Sulphur and the king of the acids. 7. Man's giant servants—the nitrogen compounds. 8. The essential industrial metals. 9. The metals. 10. The basic heavy chemicals. 11. Carbon and the carbon compounds. 12. Our fuel resources. 13. Plant food.

The method of preparing the unit assignment for a given unit may be illustrated for the first unit. First a table of specifications is prepared by the teacher for his own use, showing the topics and subtopics which in his opinion should be constituents of the unit. (Table 31.) This table also shows the estimated relative importance, in percentages, of each topic for the given school and community. A code letter is assigned each topic to facilitate the development and

Prepared by Vance M. Shobert, Head of the Science Department,

classification of test items bearing on each topic. The scheme of the unit assignment presumes the development of a problem or a series of problems dealing with each topic. The solution of the problems is expected to result in the pupil's understanding of the topic.

Table 31.—Table of specifications for the unit "Water—Nature's Most Common Compound"

Topics	Code	Esti- mated impor- tance
1. Occurrence of water	0	Per cent
(a) In the earth.	0	
(b) In the air.		
(c) In substances.		
(d) In plants and animals.		
2. Importance of water	1	
(a) In life.	•	
(b) In machinery.		
(c) In chemistry.		Ì
3. Physical properties	P	18
(a) Color and taste.	1	
(b) Odor,		l
(c) Density,	1	
(d) Specific gravity.		İ
(e) Conductivity of energy.	1	
4. Chemical properties.	C	20
(a) Solvent.		
(b) Stable.	1	1
(c) Formation of oxides.		
(d) Formation of hydrates.	1	
5. Solutions	8	20
(a) Definition of terms.		
(b) Conditions affecting solutions.		
(c) Kinds of solutions.		
(d) Importance of solutions.		
(e) Chemical solutions.		
6. Composition of water	Co	11
(a) Materials in running water.		
(b) Significance of impurities.		1
(c) Water for domestic use.		
(d) Purification of water.		
(e) Softening water.	1	1

Table 31.—Table of specifications for the unit "Water—Nature's Most Common Compound"—Continued

Topics	Codlette	
7. Oxygen (a) Occurrence.	Ox	Per cent 10
(b) Preparation.	1 4	
(c) Properties.		4
(d) Chemical conduct.		
(e) Oxides.	1	
8. Hydrogen	Н	10
(a) Occurrence.		
(b) Preparation.		
(c) Properties.		
(d) Chemical conduct.	1	

A preliminary draft of test items is next prepared. Only the items dealing with Topic 1 can be reproduced here. The items consist of facts or understandings derived from the readings and the experiments. They are an analysis of the topic and a source of questions for testing mastery. Each item is given a code number at the left; in the original a second code number at the right indicates the source of the item.

Preliminary Draft of the Test Items-Topic 1

- O- 1. Aside from petroleum, water is the only liquid found extensively in nature.
- O- 2. Water covers about three-fourths of the surface of the earth, being found in rocks, the atmosphere, and in every plant and animal.
- 0- 3. Water is found in nature in the form of solids, liquids, and gases.
- 0- 4. Water is the most extensively found and most essential liquid.
- O- 5. Foods having a relative high percentage of water are celery, watermelon, asparagus, and cabbage.
- O- 6. The process by which liquids of different densities are interchanged through membranes is called osmosis.
- O- 7. The very important root function absorption depends upon a physical process called osmosis.
- O- 8. Intermixing gases or liquids without the aid of stirring is called diffusion.

- 0- 9. When a plant is deprived of water, its leaves droop or wilt. The stiffness of the plant, due to the presence of sufficient water in the plant is called turgescence.
- 0-10. All living things depend upon water to transport their foods to the cells and to remove waste materials from the cells.
- 0-11. Three important uses of water in the plant are: To supply a necessary portion of the plant foods; to act as a means of transfer within the plant; and to support the plant.
- 0-12. The response of the plant roots to water is called hydrotropism.
- O-13. Rain water, falling on the earth, disappears in several ways: (1)

 Part runs off directly; (2) part evaporates; (3) part trickles
 down through the soil to become part of the underground
 drainage system; and (4) some of it is absorbed by the soil to
 be used by the plants.
- 0-14. The holding of water by soil particles depends on the size of the particles and upon the kind of soil.
- 0-15. The condensation of water vapor on the surfaces of cold bodies is called adsorption.
- 0-16. Liquids change to the vapor state in three ways: (1) Vaporization; (2) evaporation; and (3) boiling.
- 0-17. Change from the liquid state to the gaseous state taking place on the surface of liquids is called evaporation.
- 0-18. Large amounts of water vapor get into the atmosphere by evaporation from bodies of water and from the soil.
- 0-19. The presence of water vapor in the air is an important factor in the determination of the weather.
- 0-20. The scientific determination of the amount of water vapor present in the atmosphere is called hygrometry.
- 0-21. The common forms of the hygrometer are the dew-point hygrometer, the chemical hygrometer, and the wet-and-dry-tube hygrometer.
- O-22. When a substance crystallizes from water solutions and unites with a definite quantity of water necessary to give shape to the crystal, this water is called water of crystallization.
- O-23. Examples of substances which contain water of crystallization are copper sulphate, sinc sulphate, and sodium carbonate.
- 0-24. Substances formed by the union of a chemical compound and a definite weight of water are called hydrates.
- 0-25. Efflorescence is the losing of water by a chemical substance when the substance is exposed to the air.
- 0-26. An efflorescent material is one that loses water of crystallization upon exposure to the air.
- 0-27. Substances, like lime, wool, or silk, which absorb moisture from the air are called hygroscopic.
- 0-28. Examples of hygroscopic materials are calcium chloride and caustic soda.



0-29. Substances which absorb enough moisture from the air to become wet are called deliquescent materials.

0-30. Examples of deliquescent materials are table salt and calcium chloride.

The following questions, problems, and exercises constitute the assignment for Topic 1 (Table 31) and will serve to give an idea of the development of the entire unit.

Occurrence of Water

1. Carefully weigh some samples of soil, taken from various places, and dry carefully over a sand bath. Reweigh after the drying and note the loss of weight. Explain the loss of weight. Explain the fact that the samples seemed dry to the unaided eye, yet contained much water.

2. Explain the physical fact that particles of matter are able to hold

water.

3. What effect would the condition of fineness of the soil have on the

amount of moisture to be retained by the soil?

4. Cultivation of crops requires that a very thin layer of soil be well pulverized and well stirred up occasionally to cover the watercontaining soil beneath. How does this layer protect the lower

moisture-containing layer of soil?

5. Evaporate to dryness several samples of hydrant water. samples should be carefully weighed and measured before evaporation and after evaporation. Include in this experiment some samples of well water, spring water, running water, and distilled water. Arrange a table showing the comparison of the weights of soluble material contained in each sample.

6. Water for steaming purposes should be as free as possible of dissolved materials. Explain the effect of this material on boilers.

7. Explain why large industries should be exceedingly careful to get water for steaming purposes, relatively free of dissolved material.

8. Carefully weigh some samples of potatoes, corn, flour, and wheat. Dry these samples carefully over a sand bath, being careful not to char or roast the sample. After the drying reweigh the sample. Explain the loss in weight.

9. Weigh some samples of sawdust and some coal. Heat carefully over a sand bath for 5 minutes. Explain the loss of weight. During the heating some globules of water collect at the mouth of the test tube. Explain the cause of this formation.

10. What physical factors are responsible for the formation of water at

the mouth of the test tube in the above experiment?

11. Carefully place a piece of rubber dam around a flower pot containing a flower in such a manner that the moisture in the soil can not evaporate. Place the prepared flower pot under a bell jar in the sun. Explain the formation of water on the inside of the bell jar.

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- 12. Test small samples of the following for water: Celery, rice, fruits, cereals.
- 13. List the foods that contain large amounts of water and the foods that contain small amounts of water.
- 14. Cut flowers tend to wilt rapidly, if not placed in water. Explain the cause of the wilting.
- 15. Water glasses and other water containers sweat during the summer when the container is subjected to a lower temperature. Explain the deposit of water on the outside of the container.
- 16. The amount of water vapor in the air is measured by an instrument called the hygrometer. Explain the construction and the operation of this instrument.
- 17. Carefully cover the inside of a flask with a thin film of water. Carefully heat the flask until the film of water disappears. Set aside to cool. Explain why the water disappeared on heating and appeared again upon cooling.
- 18. In some dry test tubes place small samples of the following: Potassium chloride, sodium chloride, barium chloride, sulphur, barium sulphate, sodium nitrate, and alum. Warm each tube carefully so as not to char or roast the sample. Record the results of this test under these headings: Weight before heating, weight after heating, amount of moisture and the appearance of the sample after heating.
- 19. Carefully weigh a lump of calcium chloride and permit to lay uncovered on the desk for several days. Describe the appearance of the sample at the end of this period. Reweigh the sample at the end of the experiment. Account for the change in weight.
- In some States calcium chloride is scattered over the roads to keep down the dust. Explain how calcium chloride does the work.

The Morrison 5-step teaching cycle is followed in teaching the unit.

European history.—In the Thornton Township High School, Harvey, Ill., the European history course is organized into seven units, namely: 1. Primitive man, the father of a crude civilization. 2. River valley civilization contributes to European civilization. 3. The ancient Greek enlightens the world. 4. The ancient Roman consolidates the world. 5. The decline of Europe during the Dark Ages. 6. The awakening of Europe after the Dark Ages. 7. The European states turn from nationalism to imperialism. Each unit is



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outlined prior to the building of the unit assignment. The outline for Unit Pfollows:

Unit I. Primitive, Man: The Father of a Crude Civilization

PROBLEM 1

Primitive man during the early prehistoric period:

- a. Definition of history.
 - (1) History is the written record of man.
- b. Comparison of the length of prehistoric and historic times.
- c. Probable origin and migration of earliest man.
 - (1) Home of primitive man.
 - (2) Spread of the races (use map of world)—
 - (a) Caucasian (White).
 - (b) Negro (Negroid).
 - (c) Mongolian (Mongoloid).

PROBLEM 2

The sources of our information about primitive man:

- a. Material remains (source of)-
 - (1) Caves.
 - (2) Layers of rock.
 - (3) Swiss lake villages.
 - (4) Tombs.
 - (5) Shell heaps.
- b. Present-day primitive people-
 - (1) Tasmanians.
 - (2) American Indians.
 - (3) Eskimos.
- c. Narratives of historians and travelers-
 - (1) Marco Polo.
 - (2) Columbus.

PROBLEM 3

Primitive man meets his physical and social needs:

- a. Superior equipment of man-
 - (1) Brain.
 - (2) Erect posture.
 - (3) Hands.
 - (4) Voice.
- b. Physical needs
 - (1) Food-
 - (a) Vegetarian by necessity.
 - (b) Small animals for food.
 - (c) Larger animals for food.5
 - (d) Domestication of plants and animals.

Not used in organization.

Primitive man meets his physical and social needs—Continued.

- b. Physical needs—Continued.
 - (2) Clothing—
 - (a) No clothing.
 - (b) Clothing in cold climates
 - (1) Small skins.5
 - (2) Large skins.5
 - (3) Leather.5
 - (4) Cloth.5
 - (c) Clothing in the warmer climates -
 - (1) Bark.5
 - (2) Woven grass, cotton, linen, etc.5
 - (3) Tools.
 - (a) Early tools man collected -
 - (1) Wood.5
 - (2) Stone.5
 - (3) Bones.
 - (b) Stone tools made by man -
 - (1) Rough stone tools.5
 - (2) Polished stone tools.5
 - (c) Tools made out of materials other than stone
 - (1) Clay utensils.
 - (2) Weaving.
 - (3) Bow and arrow.5
 - (4) Fishing nets, etc.5
 - (4) Shelter.
 - (a) Trees.5
 - (b) Caves.5
 - (c) Wigwams.
 - (d) Cabins.5
 - (e) Swiss lake.
 - (f) Cliff dweller.5
- c. Social needs.
 - (1) Development of communication.
 - (a) Language-
 - (1) Crude sounds.
 - (2) Gestures.5
 - (3) Picture writing.
 - (4) Alphabet.
 - (b) Transportation-
 - (1) Man power.
 - (2) Rivers.5
 - (3) Animals.

Not used in organization

Primitive man meets his physical and social needs—Continued.

- c. Social needs—Continued.
 - (2) Development of protection—
 - (a) Individual.5
 - (b) Family.5
 - (c) Clan.
 - (d) Tribe.
 - (e) Nation or league.
 - (3) Development of division of labor-
 - (a) Individual (no division of labor).
 - (b) Family.
 - (c) Clan.5
 - (d) Tribe.
 - (e) Nation.

PROBLEM 4

Stages in human progress:

- a. Social stages of living-
 - (1) Appropriative.
 - (2) Adaptive.
 - (3) Creative.
- b. Economic stages of living-
 - (1) Collecting.
 - (2) Hunting.
 - (3) Pastoral.
 - (4) Agricultural.
 - (5) Industrial.

PROBLEM 5

Contributions of primitive man:

- a. Fire.
- b. Communication.
- c. Social institutions.
- d. Formation of tools and weapons.
- e. Domestication of plants.
- f. Domestication of animals.
- g. Industries of the early home, such as weaving.

The guide sheets carrying the assignment for Problem 1 of the first unit are reproduced below. The assignment consists of (1) an introduction; (2) essential references; (3) supplementary references; (4) specific objectives to be attained, and (5) exercises for attaining the objectives.

^{*} Not used in organization.

Guide Sheets, Unit I, Problem 1.—
"Primitive Man During the Early Prehistoric Period"

It is difficult to define history in a manner that is satisfactory to all historians. For our purposes we will use a very simple definition which helps us locate the beginning of history: "History is the written record of man."

In order to understand the history of mankind it is necessary to appreciate the vast amount of time that passed before man entered the period of history. Scientists disagree as to the length of time that man has lived upon the earth. Even the most conservative, however, say about 500,000 years. The first thing, then, that we must do in this unit is to find out what history is and when it begins. With that point located we can devote the rest of the time in this unit to a study of man's life in this prehistoric period.

The discoveries of scientists indicate that probably man started in the region to the south and east of the prehistoric Caspian Sea. From this point man slowly migrated over the entire world. These men did not realise that they were moving as they pressed ever forward in their eternal search for food. Naturally in a movement of this kind man followed the lines of least resistance. Mountains, rivers, deserts, and other similar physical barriers were avoided. This resulted in certain great channels down which this slow primitive movement of population flowed. One of these was eastward into China; another was west into Europe; another was southwest into Persia and Asia Minor; another was southeast into Burma and the Siamese Peninsula; and another was northeast into Siberia. Conditions changed as man moved into these new regions and man was forced to change so as to adapt himself to the conditions in the new region. This is probably the reason that we have the different races of men to-day. The race we are particularly interested in, naturally, is the Caucasian, or the white race, which migrated into Europe.

The references given below are divided into essential and supplementary references. The essential references should be read by all the pupils. In the supplementary references the brief statements made in the essential references will be explained in detail. Superior pupils should not be content to read just the meager account given in the essential references.

Essential references:

Fairchild, Elements of Social Science, pp. 15-23. •
Marshall, Readings in the Story of Human Progress, pp. 8-12.
Van Loon, Story of Mankind, pp. 1-12.
Arneson, A Gateway to Social Science, Chapter IV.

Supplementary references:

Wells, Outline of History, pp. 1–116. Clodd, The Story of Primitive Man, Chapter II.



Supplementary references—Continued.

Haddon, The Wandering of Peoples.

Smallwood, Man the Animal.

Thorndike, A Short History of Civilization, Chapter I.

Specific objectives

- 1. To define history.
- 2. (a) To secure an appreciation of the length of time man has been on earth.
 - (b) To locate the dividing line between historic and prehistoric times.
- 3. (a) To locate the probable source of primitive man.
 - (b) To develop an understanding of the character of early man's migration over the world.
 - (c) To clarify our understanding of the factors which produced the various races of people.
 - (d) To secure a knowledge of the probable routes that the various races of people took, especially the route of the Caucasian, or white race.
 - (e) To secure a rudimentary knowledge of the map of the world.

Exercises

- 1. Define history briefly.
- Draw a straight line in your notebook. Let this line represent man's entire life on this earth. Indicate then the relative portions of this line which are prehistoric and historic. Locate also the place where writing began.
- 3. On Map No. 1 trace the probable routes followed by early man in his migrations. Name the various continents on your map. Then make a key for your map, which shows the probable races which developed during this movement of man. (The teacher will explain the use of the map key in this work.)

The Morrison 5-step teaching cycle is used in developing the units of this course.

General botany.—In concluding this chapter one unit and portions of the corresponding unit assignment from a course in general botany in use in the Connellsville High School, Connellsville, Pa., will be reproduced.

Prepared by John F. Lewis, department head.

The Unit

- I. Unit concept: Plants, depending upon their structure, their environment, and stage of development, use different kinds of food. This food is changed so it can be transported for use in providing energy to build new living material. Materials in food of no use to the plants in these processes are eliminated.
- II. The problems of the unit:
 - A. Do all plants use the same kinds of food?
 - B. What factors govern the kinds of food used by plants?
 - C: How is organized food made available to the plant's parts needing it?
 - D. How is digested food carried to the parts needing it?
 - E. How are plant foods used?
 - F. What is done with the food parts which the plants are unable to use in growth?
- III. Sub-ideas involved in each problem:

Problem A.

- Most green plants use food manufactured from raw materials.
- 2. A few green plants depend on animal matter for their nitrogenous food.
- 3. Plants without chlorophyll depend upon manufactured food for their living.

Problem B.

- 1. The structure of plants limits the type of food used.
- 2. The environment of plants limits the availability of the food supply.
- The plant's stage of development limits the kinds of food used.

Problem C.

- Ferments secreted by plants work on the organized food of green plants in order to change it to a soluble form which can be carried to the plant parts needing it.
- Ferments secreted by nonchlorophyllous plants dissolve organized food so that it can be absorbed by them.

Problem D.

- 1. In the simplest plants absorption is carried on by osmosis and diffusion.
- In plants of more complex structure (algæ, fungi, mosses, etc.) absorption and distribution are carried on by osmosis, diffusion, and capillary attraction.
- In the ferns, fern allies, and flowering plants, absorption and distribution are carried on by osmosis, diffusion, and capillary attraction in a complex transportation system.

III. Sub-ideas involved in each problem—Continued. Problem E.

> Available food is converted into new building material and energy for growth.

> Chemical and physical forces furnish the bases for the change from dissolved organized food to new material.

Problem F.

1. Caseous wastes (carbon dioxide and oxygen) are released by living cells.

2. Liquid wastes (generally water) are lost into the air by transpiration.

3. Mineral wastes are stored in the parts of the plant least used in growth.

Needless to say, the preceding analysis of the unit is for the teacher's, not the pupil's, use. The unit having been stated as a concept, this concept having been broken down into component concepts stated as problems, and each problem having been broken down into sub-ideas or sub-concepts, it then becomes possible to plan the pupil activities and pupil experiences necessary that the group of related ideas or concepts may become a part of the pupil's habits of response or behavior. It is important to recognize that the analysis of the unit sets up the real specific objectives toward which pupil and teacher must work. Moreover, the attainment of each of the specific objectives brings nearer the attainment of the main objective—the unit concept or the unit itself. The following guide sheet or unit assignment is placed in the hands of each pupil.

Unit assignment

Unit I. How do plants use food?

Reference Text: Practical Botany, by Bergen and Caldweil. Supplementary Text: Textbook of Botany (Part 2, Physiology), by Coulter, Barnes, and Cowles.

Problem 1. What foods do plants use?

Exercise 1. What foods do green plants use? Paragraph 342 (p. 371).

Exercise 2. What foods do carnivorous plants use? Paragraph 354 (p. 385).

Exercise 3. What foods do plants without chlorophyll use? Paragraph 342 (p. 371).

Summary exercise: Answer the question asked in the problem.

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Unit I. How do plants use food?—Continued.

Problem 2. What factors govern the kinds of food used by plants?

Exercise 1. Do the data obtained from studying the problems of the unit on how plants obtain their food, lead you to believe that the structure of each plant has something to do with the kind of food the plant uses? Why?

Exercise 2. Does the place in which the plant lives have anything to do with the kind of food it can obtain? Explain.

Exercise 3. Does the stage of development attained by each plant decide the kinds of food it may use? Read paragraph 152 (p. 164), paragraph 175 (p. 189), paragraph 225 (p. 232), paragraph 128 (p. 137), paragraph 133 (p. 142).

Summary exercise: Answer the question asked in the problem. Problem 3. How is organized food made available to the plant

parts needing it?

Exercise 1. Read paragraph 71 (p. 78), paragraph 72 (p. 78), paragraph 134 (p. 144) and explain the ways in which organized food is prepared for use in green plants.

Exercise 2. Read paragraph 355 (p. 385), paragraph 356 (p. 386), paragraph 357 (p. 387) and tell how this plant group digests its nitrogenous food. Since this plant group possesses chlorophyll, its starchy foods are digested in the same manner as the green plants mentioned under exercise 1.

Exercise 3. Read paragraph 37 (p. 36), paragraph 210 (p. 220), paragraph 219 (p. 226) and tell how plants without chlorophyll digest their food. Are the ferments mentioned akin to ensymes? (See index under exymes.)

Sum nary exercise: Answer the question asked in the problem? Problem 4. How is digested food carried to the parts needing it? Exercise 1. Read paragraph 72 (p. 79), paragraph 73 (p. 80) and note the ways digested food is carried.

Exercise 2. Review your data on bacteria and the fungi and decide from what you learned in working out example 1 (exercise 1) whether the same processes of food distribution are used.

Summary exercise: Answer the question asked in the problem. Problem 5. How are plant foods used?

Exercise 1. Read paragraph 152 (p. 164), paragraph 168 (p. 182), paragraph 168 (p. 184), paragraph 170 (p. 185), paragraph 178 (p. 193), paragraph 181 (p. 196), paragraph 200 (p. 214), paragraph 206 (p. 218), paragraph 222 (p. 229), paragraph 225 (p. 232), paragraph 243 (p. 259) and describe in a general way what happens to these plants when digested food material is supplied to them.



Unit I. How do plants use food?—Continued.

Problem 5. How are plant foods used?—Continued.

Exercise 2. Observe the common lima bean from its planting until its death and tell what it does when supplied with abundant digested food material. If you do not know much about the development of the bean, ask your father (most fathers know something about gardening) or some neighbor who knows something of garden things.

Summary exercise: Answer the question asked in the problem. Problem 6. What is done with the food parts which the plants are unable to use in growth?

Exercise 1. How are the gaseous wastes of plants eliminated? Read paragraph 20 (p. 19), paragraph 17 (p. 15) and tell what happens to the carbon dioxide (CO₂) and exygen (0) which occur as waste materials in living processes of plants.

Exercise 2. How are the liquid wastes of the plant eliminated? Read paragraph 18 (p. 18) and tell how the excess water of the plant is taken care of.

Exercise 3. What is done with the mineral material which is not used in the process of growth? When in the library try to find the answer to this question in *Introduction to Vegetable Physiology*, by Green.

Summary exercise: Answer the question asked in the problem.

General Summary

After you have answered all of the problem questions of the unit, prepare a general summary of the unit by answering the unit question, "How do plants use food?" Write neatly, spell countly, and be very careful of your English. When your summary is finished, submit it to the instructor. If it is accepted, write it up in ink and place it in your notebook with sketches illustrating it. Ask the instructor for a list of illustrations to be used and directions for placing them on plates.

Mr. Lewis follows the Morrison 5-step teaching cycle. His method of meeting certain practical teaching situations is of interest. During the assimilation period when a pupil finishes a problem he presents a summary of his findings. If the summary is a clear statement of the idea or ideas to be developed by means of the problem the pupil's progress is checked on a cross-section sheet prepared for keeping the record of the class and the pupil goes on with the next problem. Otherwise, the pupil's summary is returned to him with notes concerning errors and deficiencies. When the pupil has summarized satisfactorily each of the problems of the unit he prepares a general summary of the entire unit.

Following the acceptance of the general summary by the teacher the pupil meets a general summary test which amounts essentially to reproducing from memory without the aid of notes the general summary of the unit. If the results of the general summary test are satisfactory the pupil is given an objective detail test of 100 points. His performance on this test being acceptable, the pupil may apply for supplementary problems or projects related to the unit.

A special coaching period is maintained after school for the very slow pupils. As soon as all members of the class except the very slowest have turned in acceptable general summaries the class begins a discussion of the details of the unit, the instructor participating. Following this discussion, each pupil revises his summary with a view to presenting it in class. Two or three pupils are selected for oral presentation of the unit during the "recitation" period. Pupils still showing lack of understanding of the unit report to the special coaching class for re-teaching. The class proceeds with the next unit.

S. SUMMARY

This chapter is given to quotation and discussion of a few outstanding examples of efforts put forth by teachers in service to develop better teaching and learning units and corresponding unit assignments. Attention is called to the clear-cut distinction which should exist between the unit and the unit assignment. The point is made that the guide sheet or unit assignment developed by the teacher is likely to be much briefer in subjects wherein the text tends to determine the accepted units and their sequence. This is true because the texts in such subjects are to a large extent themselves guide sheets.

Samples of brief assignments are reproduced for stenography, typing, Latin, algebra, industrial arts, and history. Differentiated assignments, organized around empirical point systems, are reproduced for geometry, English classics, and elementary economics. Finally, in Section 4, assignments are reproduced which clearly distinguish between the unit and the unit assignment and show the relation of the one to the other. Two of these assignments are taken from the

field of chemistry, one from modern European history, and one from general botany.

All specimen units and unit assignments reproduced in this chapter are intended to illustrate techniques. The use of these illustrations does not imply either approval or disapproval of the quoted subject matter or of the suggested pupil activities and experiences.

PART III. OTHER PROVISIONS, AND PLANNING A PROGRAM

CHAPTER I: OTHER PROVISIONS FOR INDIVIDUAL DIFFERENCES

1. THE CONCERN OF THE CHAPTER

Topics to be considered.—In the succeeding sections of this chapter facts are presented concerning the use of the following provisions for individual differences in secondary schools:

(1) Variation in number of subjects a pupil may carry;

(2) credit for out-of-school projects or studies;

(3) frequent promotions;

(4) advisory or guidance programs;

(5) psychological studies; and

(6) the scientific study of problem cases.

Two questions anticipated.—The critical reader of this and of the preceding chapters may appropriately ask why six topics yet remain for consideration. Earlier in this report the suggestion was made that all provisions for individual differences now in use in the secondary schools may be grouped into seven categories. Three of these have occupied Parts I and II of this monograph. Only four categories remain. reality no new categories are being introduced. At first glance the topics of "frequent promotions" and "psychological studies" might seem to be previously unmentioned categories. As a matter of fact they are not. They are given separate sections in this chapter primarily because each was the subject of a separate follow-up inquiry. Analysis has shown that the essential practices under these terms may be classified consistently under one or another of the seven categories which already have been recognized.

The second question is likely to arise when the reader examines the section dealing with guidance. The small amount of space allotted to guidance in this report is neither a measure of the importance of guidance as a provision for individual differences nor an indication of the amount of available data

on the subject. At the outset of the national survey those in charge recognized guidance as a topic of such outstanding importance that it was made a separate project of the survey with Prof. William C. Reavis in charge. For adequate treatment of guidance, therefore, the reader is referred to Monograph 14 of this survey which deals with the subject.

1. VARIATION IN NUMBER OF SUBJECTS A PUPIL MAY CARRY

Variation of pupil load in schools of different geographical areas, of different sizes, and of different types of organization. Providing for individual differences through variation in the number of subjects which pupils may carry is a procedure which of necessity leads to the retardation of those pupils carrying less than the normal number of subjects and to the acceleration of those pupils carrying more than the normal number of subjects, provided each pupil receives credit for the work which he does. Since credits are now defined largely in terms of units of time, any attempt to vary pupil load must reckon with the requirements and standards of State departments of education and of other accrediting agencies. Hence, it may occasion some surprise that 75 per cent of the 8,594 schools whose replies to the preliminary inquiry were tabulated should report this procedure in use as a provision for individual differences. This percentage holds with fair uniformity for different areas of the country, varying from 69 per cent in New England to 79 per cent in the West. Twelve per cent of all respondents using the plan estimate unusual success with it. The percentage of estimated unusual success also holds fairly constant in different areas ranging from 10 per cent in the Middle West to 16 per cent in the Middle Atlantic States. Use of the procedure shows no regular increase or decrease with change in the total enrollment.2 However, respondents from schools with enrollments of more than 100 report half again as much use of the procedure with estimated unusual success as do the respondents from schools of fewer than 100 pupils. The practice is much more preva-

Distributed as follows according to geographical area: New England, 583 achobis; Middle Atlantic, 1,489; Southern, 1,739; Middle West, 3,727; and West, 1,066.

² Schools distributed according to size as follows: 50 os. fewer, 1,476; 51-200, 1,994; 101-250, 2,391; 251-500, 1,128; 501-780, 561; 751-1,000, 204; more than 1,000, 740.

lent in schools which include the higher secondary grades than in schools which include only the lower secondary grades. (Table 1.) For example, only 54 per cent of the respondents from schools including grades 7 to 9 report the use of the procedure and only 5 per cent estimate unusual success with it, as contrasted with corresponding percentages of 84 and 14 for schools including grades 10 to 12. The schools of the miscellaneous "All others" group, which includes various combinations of the lower secondary grades, also report comparatively low percentages of use and of use with estimated unusual success.

Table 1.—Percentages of use and of use with estimated unusual success of variation in number of subjects a pupil may carry, in schools of different types of organization

	Num-	lum-		ntages of		Percentages of	
Type of organi- zation	ber of schools reply- ing	Use	Use with estimated unusual success	Type of organization	ber of schools reply- ing	Use	Use with estimated unusual success
ì	2	8	4	1	3	3	4
10 to 12 7 to 12 9 to 12	308 1, 284 4, 304	86 82 80	- 14 10 10	7 to 9	614 1, 341	54 58	1
8 to 11	638 105	78 62	10	Total	8, 594	75	

The follow-up inquiry.—A follow-up inquiry addressed to 400 schools in which variation in pupil load was estimated to be meeting with unusual success was answered by 141 schools representing 29 States. Only 3, or approximately 2 per cent, of these schools include grades 7 to 9. By way of contrast, 25 per cent include grades 7 to 12, and 50 per cent are unreorganized 4-year high schools nearly all of which include grades 9 to 12. These facts confirm one implication of the data from the preliminary inquiry, namely, that variation in pupil load is a procedure which is much more prevalent in the higher than in the lower grades of the secondary school. Sixty per cent of the schools responding to the follow-up inquiry enroll more than 500 pupils, thus suggesting that the practice is employed more frequently in the larger schools.

Permitting pupils to vary from the normal schedule.—In the schools studied the principal, or a staff member designated by him, determines the number of subjects each pupil may carry. If the duty is delegated by the principal it is usually entrusted to a dean, adviser, counselor or home-room teacher. Twenty-one different items are mentioned as likely to influence the official's decision concerning the number of subjects which a given pupil should carry. These items in the order of frequency of mention are:

- 1. The pupil's average scholarship marks in all subjects combined.
- 2. The pupil's health.
- 3. Whether fewer or more than four units are needed by the pupil for graduation at end of the present year.
 - 4. Pupil's age.
 - 5. Pupil's industry, application, or effort.
- 6. Extent to which pupil has duties outside of school hours making demands upon his time and energy.
 - Extent to which the pupil's total load consists of repeated subjects. upil's regularity of attendance.
 - upil's intelligence quotient from a group test.
 - 10. Extent to which pupil participates in extracurriculum activities.
 - 11. Pupil's physical maturity.
 - 12. Teacher's rating of pupil's academic ability or intelligence.
 - 13. Pupil's score or mental age from a group mental test.
 - 14. Pupil's home environment.
 - 15. Pupil's social maturity.
- 16. Average of several teachers' ratings of pupil's academic ability or intelligence.
 - 17. Average scholarship marks earned by the pupit in certain subjects.
 - 18. Pupil's age or score on educational or achievement test.
 - 19. Pupil's individual intelligence-test score or mental age.
 - 20. Pupil's intelligence quotient from an individual test.
 - 21. Pupil's educational or achievement quotient.

Unquestionably the determining factor in most cases is the pupil's average scholarship in all subjects combined. For example, in the James Monroe High School of New York City any pupil, except a first-year pupil, may be permitted to carry five majors if he passed four or more majors during the preceding year with prescribed averages. That other factors also are considered is evidenced further by the application which a pupil in the Los Angeles High School, must file with the scholarship adviser for permission to take an excess program. On the application form the pupil gives

the following data: His name, age, grade, subjects carried during the preceding semester with his final mark in each, and his attendance record. In addition, he answers the following questions:

(1) How many recommended credits have you? (2) Do you plan to go to college? (3) Have you any failures or subjects not yet completed? (4) What school activities will you have? (5) What outside work or private lessons will you have? (6) Do you need extra credits in order to graduate this semester? (7) Does your program as planned by the credit secretary call for an excess? (8) What subjects are desired? (9) What are the reasons for requesting an excess program?

The application must be approved by the parent and by the school physician. If the scholarship adviser approves the application he issues a permit to the pupil to carry a

prescribed excess program.

Variation of pupil load in the high schools of Baltimore. -Since 1901, capable pupils in the Baltimore Polytechnic High School have been permitted to carry a sufficient number of majors to enable them to do five years' work in four years. The same plan is also in operation in City College, an academic high school. The pupils at graduation may enter any one of a number of leading colleges and universities with sophomore standing. Graduates of City College are accepted with sophomore standing by Johns Hopkins University and the University of Maryland. Graduates of Polytechnic High School are accepted with sophomore standing by such institutions as Johns Hopkins University, University of Maryland, Cornell University, Lehigh University, Carnegie Institute of Technology, Massachusetts Institute of Technology, Drexel Institute, and the University of Pennsylvania. During the school year 1930-31 Polytechnic High School enrolled 776 pupils carrying 5 majors and graduated 113 pupils with sophomore standing; City College enrolled 180 pupils and graduated 16.

Success of the procedure.—That considerable numbers of pupils over a long period of years in Baltimore have succeeded in attaining sophomore standing in college in the same period of time which most pupils spend in achieving freshman standing is real evidence of the success of the procedure. Also data submitted from the James Monroe High School of

New York City show that the failing rate among pupils permitted to carry 6 majors is only half as high as the failing rate among pupils permitted to carry 5 majors, and only a third as high as the failing rate among pupils carrying but 4 majors. Unquestionably, many pupils can carry 5 majors more easily than the normal pupil can carry four.

A composite from 60 schools. - In 60 schools from which data were received in this study showing actual numbers of pupils carrying normal, above normal, and below normal loads, a composite was made showing that in terms of units of the North Central Association 50 per cent of the pupils are carrying 4 units of work; 15 per cent are carrying more than 4 and less than 5% units; 7 per cent are carrying 5% or more than 51/2 units; 16 per cent are carrying less than 4 and more than 21/2 units; and 12 per cent are carrying 21/2 or less than 2½ units. In other words, these figures show that of each 100 pupils, 22 are being accelerated and 28 are being retarded if 4 units per year be regarded as a normal load. If 4 to 4% units be regarded as a normal load then only 18 in each 100 are being accelerated. In practically all these schools retarded pupils graduate in from 4½ to 5 years and accelerated pupils graduate in from 3 to 31/4 years. This situation must not be regarded as typical of the thousands of schools reporting variations of pupil load on the preliminary inquiry. evidence indicates that in most of these schools such variation as is made in pupil load affects only small percentages of the total enrollment and is in no sense a carefully formulated plan to attain the maximum possibilities of the procedure, such as are being attained, for example, in Baltimore or in the James Monroe High School of New York. A major obstacle to any extensive variation in the number of subjects which a pupil may carry seems to be the standards for pupil load established by State departments of education and by other accrediting agencies.3

³ For the past few years the North Central Association has permitted certain selected schools, under guidance and supervision of the North Central Association, to deviate from the present established standards which directly or indirectly affect pupil load. These experiments are not given space in this monograph because they are discussed in Monograph No. 5, The Reorganisation of Secondary Education, of the National Survey of Secondary Education.

3. OUT-OF-SCHOOL PROJECTS OR STUDIES

An overview.—Credit for projects or studies carried outside of school hours was reported in use by 3,451 schools, or about 40 per cent of those schools whose replies were tabulated. Approximately 12 per cent of the respondents using the plan estimated unusual success with it. Percentages of use in different geographical areas are as follows: The West, 46; Middle West, 41; South, 40; New England, 38; and Middle Atlantic, 36. Schools including only the lower secondary grades, as for example, grades 7 to 9, are making considerably less use of out-of-school projects and studies than are schools of other types of organization which include the higher secondary grades. Schools enrolling 50 or fewer pupils report the least use (30 per cent) of out-of-school projects or studies and schools enrolling from 101 to 500 pupils report the highest use (46 per cent).

More detailed study. - As ollow-up inquiry was addressed to 120 respondents who had estimated unusual success with outof-school projects or studies. All enrollment groups and all types of organization except schools including grades 7 to 9 were represented in the replies. Analysis of the replies revealed that no unusual or even extensive work is being done with out-of-school projects or studies. A number of schools reported the usual Smith-Hughes projects. Omitting Smith-Hughes work from consideration, we find that by far the most frequent out-of-school project or study is some phase of instrumental music. Arranged from the highest to the lowest in the order of the number of pupils enrolled, other fields in which out-of-school projects or studies are carried on are: Physical training, vocal music, cooking, sewing, animal husbandry, Bible study, field crops, various phases of industrial arts, privately tutored subjects to make up failures, draftsmanship, correspondence study, and garden crops. A composite of all schools reporting shows that pupils who are carrying these various types of out-of-school projects or studies are only a fraction of 1 per cent of the total enrollment.

4. PROMOTIONS MORE FREQUENTLY THAN EACH SEMESTER

Preliminary study.—Promotions more frequently than each semester as a provision for individual differences are reported on the preliminary form by 686 schools, or about 8 per cent of those schools from which replies were tabulated. Of those respondents using the plan 103, or about 15 per cent, estimated unusual success with it. The plan is used to a considerably less extent in New England and the Middle West than in other sections of the country. It is practiced much more in schools which include the lower secondary grades only, than in schools including the higher secondary grades only, being reported by 27 per cent of schools including grades 7 to 9, and by 4 to 5 per cent of schools including grades 10 to 12 or 9 to 12. Its use increases regularly with increase in the size of the school until enrollment group more than 1,000 is reached where the percentage of use declines somewhat.

TABLE 2.—Percentages of use and of use with estimated unusual success of promotions more frequently than each semester in schools of different enrollment groups

Enrollment group	Num-	Percentage of			Num-	Percentage of		
	ber of schools reply- ing	Uso	Use with estimated unusual success	Enrollment group	ber of schools reply- ing	Use	Use w estima unusu succe	ted
1	3	3	4	1	3	3	.4.	,
50 or fewer	1, 476 1, 994 2, 391	5 5	1	751 to 1,000	804 740	20 16		3
251 to 500 501 to 750	1, 128 561	8 11	1 2	Total	8, 594	8		1

More intensive study.—A comprehensive follow-up inquiry to 100 schools estimating unusual success with frequent promotions was responded to by 43 schools. Only 21 of these returns actually represented plans for promotion more frequent than each semester. In 5 of the 21 schools pupils are promoted each 12 weeks; in 1, each 9 weeks; and in 15, "continuously." The reader of Part II will recall that "continuous promotion" is a logical component of plans characterized by the unit assignment. Continuous pro-

motion is in effect if the pupil receives credit for each unit of work when he has mastered it. Thus he advances by steps, and at his own rate, from one grade to another. Since this type of "frequent promotion" seems to be the only type likely to be very effective in providing for individual differences, and since it is logically inherent in plans characterized by the unit assignment, frequent promotions have not been classed in this study as a separate category among provisions for individual differences. Obviously, promotion of all pupils each 9 or 15 weeks with the consequent work entailed by complete reorganization of the school at such frequent intervals is likely to prevent, rather than to further certain other efforts to provide for the individual, such as homogeneous grouping or the formation of special classes.

5. ADVISORY AND GUIDANCE PROGRAMS

An overview. - Twenty-two per cent of the 8,594 schools whose replies to the preliminary inquiry were tabulated reported educational and vocational guidance through exploratory courses, and 42 per cent reported advisory programs for pupil guidance. (Table 3.) No marked differences in percentages appear for the different geographical areas. However, decided differences in the extent to which exploratory courses are used are in evidence among schools of different types of organization. For example, only 10 per cent of schools including grades 8 to 11 report exploratory courses while such courses are reported by 65 per cent of schools, including grades 7, to 9. Ranked from the highest to the lowest in terms of percentages of use of exploratory courses for educational and vocational guidance, the different types of organization are: 7 to 9, 7 to 12, 10 to 12,6 to 11, miscellaneous grade combinations, 9 to 12, and 8 to 11. Obviously exploratory courses are preponderant in the reorganized schools and particularly in those reorganized schools including the lower secondary grades. The range of use of advisory programs for pupil guidance extends from a maximum of 67 per cent to a minimum of 31 per cent. Ranked from the highest to the lowest in terms of percentages of use of advisory programs for pupil guidance the different types of organizations are: 7 to 9, 10 to 12,7 to 12,6 to 11,9 to

12, 8 to 11, and the group including miscellaneous grade combinations. With but one or two exceptions involving enrollment groups 751 to 1,000 and more than 1,000, the extent of use of either exploratory courses or advisory programs for pupil guidance increases regularly as the total enrollment increases. (Table 3.) The extent of use with estimated unusual success shows the same trend.

Table 3.—Percentages of 8,594 schools reporting pupil guidance through exploratory courses and advisory programs

	Num-	Vocational guidance		Educational guidance		Advisory programs	
Enrollment group	ber of schools reply- ing	Use	Use with estimated unusual success	Use	Use with estimated unusual success,	Use	Use with estimated unusual success
1	1		4	3	•	7	. 8
50 or fewer 51 to 100 101 to 250 251 to 500 501 to 750 751 to 1,000 More than 1,000	1, 476 1, 994 2, 391 1, 128 561 304 740	13 14 20 30 36 47 40	1 1 2 2 3 5 5	10 11 18 32 44 52 46	0 1 1 3 6 10 8	24 32 40 50 59 71 75	3 2 5 8 9 17 19
Total	8, 594	22	2	22	2	42	

More intensive study included in the project on grance.—
Preliminary consideration has been given to certain phases of guidance in this study because of the outstanding position held by guidance among major provisions for individual differences. Its very importance has caused it to be set aside as a separate project of the National Survey. Outstanding guidance practices are presented in detail in the separate monograph mentioned earlier in this chapter.

6. PSYCHOLOGICAL STUDIES

Data from the preliminary inquiry.—Psychological studies were reported as provisions for individual differences by 1,077 of the 8,594 schools whose replies were tabulated. Only 70, or 6 per cent, of the respondents estimated such studies to be meeting with unusual success. Use of psychological studies increases regularly with increase in total enrollment. (Table

4.) The percentages of use in different geographical areas range from 11 in the Middle West and South to 12, 15, and 17 in New England, the Middle Atlantic States, and the West. In schools of different types of organization the percentages of use range from 7 and 10 in schools including grades 8 to 11 and 6 to 11, respectively, to 15, 19, and 25 in schools including grades 7 to 12, 10 to 12, and 7 to 9, respectively.

Table 4.—Percentages of use, and of use with estimated unusual success of psychological studies in schools of different enrollment groups

	Num-	Percentage of			Num-	Percentage of	
Enrollment group	ber of schools reply- ing	Use	Use with estimated unusual success	Enrollment group	ber of schools reply- ing	Use	Use with estimated unusual success
1	3	8		i	1	8	4
50 or fewer 51 to 100	1, 476 1, 994 2, 391	8 10 11	0	751 to 1,000	304 740	22 29	0 3
251 to 500	1, 128 561	13	i	Total	8, 594	12	1

More detailed study.—Because of the wide variety of activities which might be carried on under the name of psychological studies, the principal of each of the schools reporting the item in use with estimated unusual success was asked to write a letter descriptive of what was being done under the term. The replies showed that studies described as psychological studies range from individual or group testing projects to elaborate case studies more properly described as the scientific study of problem cases. Data from the individual or group testing projects in these schools are used in connection with such provisions for individual differences as the scientific study of problem cases, homogeneous grouping, the differentiation of unit assignments, and the assignment of pupils to special classes. The studies reported include: Studies of failures; the administration of educational tests and the subsequent study of pupil progress; case studies of all pupils retarded two or more years; studies of directed learning; studies of reading difficulties; surveys and analyses of spelling difficulties; the testing and rating of civic, social, and per-

sonality traits; and personal interviews with pupils leading to guidance. Because of the auxiliary nature of these and other studies reported under the item "psychological studies" it has seemed illogical to include the term as a separate category among provisions for individual differences now in use in the secondary schools.

7. THE SCIENTIFIC STUDY OF PROBLEM CASES

Overview from the preliminary inquiry.—The scientific study of problem cases was reported in use in 1,343 schools, or 16 per cent of all schools represented in the tabulations. Eleven per cent of the respondents using the procedure estimate it to be meeting with unusual success. The scientific study of problem cases increases in extent of use regularly as the total enrollment increases (Table 5), being used three and onehalf times as often in schools enrolling more than 1,000 pupils as in schools enrolling 50 or fewer. Use of the procedure in different geographical areas ranges from 14 per cent in the South and Middle West to 16 per cent in New England, 19 per cent in the Middle Atlantic States, and 20 per cent in the West. The range of use in schools of different types of organization extends from 13 per cent in schools including either grades 8 to 11 or 9 to 12, to 25 per cent in schools including grades 10 to 12, and 32 per cent in schools including grades 7 to 9.

TABLE 5.—Percentages of use, and of use with estimated unusual success of scientific study of problem cases in schools of different enrollment groups!

•	Per	centage of		Percentage of		
Enrollment group	Use	Use with estimated unusual success	Enrollment group	Une	Use with estimated unusual success	
1	1	3	1			
50 or fewer	10 11 18		751 to 1,000	29 35	1	
251 to 500	18	2 4	Total	16	2	

¹ For number of schools replying see Column 2, Table 4.

Replies to the follow-up inquiry.—A follow-up inquiry was addressed to each respondent who had estimated unusual success with the procedure in his reply to the preliminary inquiry. Only 29 replies were received. Eleven of these were eliminated as too unsystematic to be classed as methods of scientific study. Of the 18 usable replies 11 came from schools with enrollments of more than 750. Also 11 of the replies came from schools including grades 9 to 12. The remaining 7 replies came from schools including either grades 7 to 12, 7 to 9, or 10 to 12.

Personnel in charge of study of problem cases.—Collection and interpretation of the data used, including diagnosis, is usually the function of the visiting teacher or the school psychologist. In large cities the personnel of a centralized psychological clinic may perform this duty. As a group, the schools studied intensively do not provide trained personnel with the amount of time for the work necessary to care for all cases adequately. Of the 18 schools studied, the following 3 schools make the most generous allowances of personnel for the work: School A, including grades 9 to 12 and enrolling more than 2,000 pupils provides one psychologist who is also charged with guidance functions; school B, including grades 10 to 12 also enrolling more than 2,000 students, provides one visiting teacher giving full-time to the work; school C, including grades 7 to 9 and enrolling 1,500 pupils, employs a visiting teacher for three-fifths of her time in this work. In the remaining schools the work is in charge of the principal, an assistant principal, a dean, adviser, or counselor, each of whom also performs many other duties. In all cases, of course, much assistance is given in the work by classroom teachers, home-room teachers, school physicians, and purses.

Recommending pupils for observation, case study, and diagnosis.—Most frequently pupils are recommended for study by the classroom teacher. Next most frequently the request comes from the parent or the principal. The recommendation also may originate with an adviser, a teacher of special classes, a counselor, an assistant principal, the dean of girls, a supervisor, or the dean of boys. Usually the recommendations are made in writing on mimeographed blanks provided for the purpose. Specific symptoms shown

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by the pupil are set forth. The fact is highly significant that in the schools studied in detail 67 per cent of all recommendations for the study of pupils as problem cases originate because the pupil is retarded due to low general ability, low ability in specific fields, lack of interest, or physical handicaps. In the order of percentages of pupils recommended for study, other difficulties, offenses, or handicaps are cited as follows: Nervousness or restlessness; "spoiling" due to lax discipline in the home; "mischievousness," defined as being constantly responsible for annoyances, none of which taken singly is very serious; personality difficulties; stealing; lying; and vandalism. In the schools studied, obscenity, sex offenses, or revolt from authority only rarely become primary reasons for recommending pupils for study as problem cases.

The abbreviated preliminary study.—Immediately upon receipt of the recommendation for case study the visiting teacher, school psychologist, or other official upon whom the duty of making case studies devolves, begins a preliminary inquiry in an effort to discover at once the source of the pupil's difficulty. The large amount of data collected in these schools for all pupils proves a ready and an invaluable aid in these preliminary studies. For example, in the Oakland (Calif.) public schools such data as the following are available for each pupil enrolled: Mental age; intelligence quotient from a group intelligence test; reading age; arithmetic age; amount of retardation or acceleration; and teachers' ratings of intelligence, school work, and effort. In addition, beginning with the ninth grade a confidential personal data card (Fig. 1) is filled out for each pupil.

Data are recorded also on the reverse side of the card under the general heading of personal history. Under this heading are listed health, personality make-up, use of leisure time, disciplinary record, and vocational interests.

Each entry on the confidential personal data card is dated. The "guide card" for entering data on the personal data card carries the following instructions: (1) Under family history record such influential factors as nationality of parents, financial status, standard of living, number of children in family, child's place in family, broken home,

father or mother remarried, supervision of the child in the home, health of family, father's occupation, mother working, cooperation of home with the school. (2) Under school history record such items as (a) special abilities in the arts, academic subjects, or mechanical skills; social adaptability; executive ability; originality; and creativeness; (b) special difficulties such as lack of physical coordination, academic limitations, and social maladjustments; (c) attendance habits including regularity, truancy, and tardiness; (d) study habits, including method of attack, concentration, and physical conditions of the study room; (e) activities including

OAKLAND PUBLIC SCHOOLS					
	CONFIDENTIAL PERSONAL DA (See Guide Card				
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Featly Honey					
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			7		
School History					
Special Abilities					
Special Difficulties.					
Amendance Habita					
Study Hobits					
Activisies					
N= ale					
	Note: Competer should sign or minial o	uch autry.			

Figure 1.—Personal data card filled out for each pupil in the ninth grade, or above, of the Oakland schools. (Face of card)

clubs, class and school offices, committees, athletics, and honors. (3) Under personal history (on the reverse side of the card) record such items as (a) health, including physical handicaps and defects of hearing, vision, or speech; operations, contagious diseases, chronic illnesses, and habits related to diet and sleep; (b) personality make-up, including emotional, mental, and social characteristics; attitudes, leadership, and personal appearance; (c) use of leisure time, including reading, music, art, sports, theaters, hobbies, jobs, out-of-school clubs and organizations, home responsibilities, dances, use of automobile, amount of spending money, and smoking; (d) disciplinary record, including a statement of

offenses and corrective measures; (e) vocational interests, including statement of the parent's choice, the pupil's choice, and the counselor's advice.

Obviously with so much data at hand the tentative diagnosis of the pupil's difficulties may be undertaken almost immediately. Remedial treatment is usually prescribed and the pupil's reactions are made a matter of continuous cumulative record in order to determine the effects of the treatment.

Complete case studies.—Occasionally treatment based on the preliminary study proves ineffective. In such instances complete case studies are made. In the complete case study a composite of the practices of all schools studied shows that detailed information is secured concerning the pupil's intelligence, special abilities, character or temperament traits, and interests. The pupil's out-of-school employment and the pupil's court record, if any, are investigated. Detailed accounts may be secured of the pupil's overt and verbal responses in specific situations where he is the central Such accounts deal (1) with the pupil's behavior figure. toward the teacher and toward other pupils in the classroom, in assembly, or on the play ground; (2) with the pupil's behavior in social groups of the same sex, or of both sexes; (3) with the pupil's behavior on the street; and (4) with the pupil's behavior at home toward other members of the family. Detailed data are assembled also under the following eight headings: (1) Census data, (2) medical and physical examination data, (3) school history, (4) recreational and leisure activities, (5) pupil's associates, (6) facts concerning the immediate family, (7) other facts concerning the family, home, and neighborhood, and (8) pupil's plans for the future.

Under census data the usual items are available, such as name, age, date of birth (month, day, and year), sex, street address, race, school, grade, and telephone number.

Data secured from medical and physical examination include 4 (1) vision, (2) hearing, (3) height, (4) weight, (5) teeth, (6) tonsils, (7) health history, (8) speech, (9) nutri-

⁴ These items are listed in the order of frequency of mention by the schools studied. Items listed under the ensuing headings are also listed in the order of frequency of mention.

tion, (10) rate of physical growth, (11) coordination, and (12) heart action and condition of lungs.

School history includes (1) age at entrance, (2) number of different schools attended, (3) regularity and punctuality of attendance, (4) absence because of ill health, (5) grades repeated, (6) study habits, (7) teacher's rating of scholarship, (8) number of years actually attended, (9) grades failed, (10) subjects found difficult, (11) teachers' opinions as to reasons for unsatisfactory work or conduct, (12) grades skipped, (13) subjects found easy, (14) standing on standardized educational tests, (15) teachers' ratings of attitudes. (16) remedial devices employed by teachers and results obtained, (17) teachers' ratings of daily preparation. (18) difficulties experienced during first two weeks of the first year. (19) teachers with whom he has had trouble, (20) teachers with whom he got along well, (21) ranking of subjects according to his interests, (22) number of different teachers the pupil has had, and (23) quality of schools attended. Similar data pertaining to the pupil's elementary-school history are also collected.

Data under recreational and leisure activities include (1) types of free reading at home, (2) hobbies, (3) attendance at movies, (4) recreation preferred, (5) types of free reading at school, (6) scout membership, (7) amount of time spent in various recreational and leisure activities, (8) attitudes toward others of his own age, (9) attitudes of others of his own age toward him, (10) church attendance, (11) Sunday-school attendance, (12) Y. M. C. A. or Y. W. C. A. membership, (13) normality of his play, and (14) clubs and societies to which he belongs.

Data under pupil's associates include (1) sex of associates, (2) behavior of associates, (3) probable extent to which associates have affected his physical life, (4) temperament and character of associates, (5) probable extent to which associates have affected his emotional life, (6) probable extent to which associates have affected his intellectual life, (7) age of associates, (8) intelligence of associates, (9) interests of associates, and (10) whether the pupil or his associates take the initiative in their joint activities.

Facts concerning the immediate family include the following data for each member of the household: (1) Name, (2) nationality, (3) occupation, (4) language spoken, (5) age, (6) elementary education, (7) high-school education, (8) college education, (9) health, (10) attitudes toward society, (11) attitudes toward school, (12) estimates of temperament and character and (13) personality traits.

Other data concerning the family, home, or neighborhood, in the order of frequency of mention are (1) whether father and mother are now living, (2) whether father and mother are living together, (3) type of neighborhood where the home is located, (4) cultural resources of the home, (5) opportunity for home study, (6) pupil's attitude toward his home, (7) degree of strictness and fairness with which discipline is administered, (8) to whom in the home the pupil goes for advice, (9) by whom discipline is administered in the home, (10) whether father and mother have had serious marital difficulties in the past, (11) whether living conditions in the home are crowded, (12) whether father and mother have been previously married, (13) whether father and mother are congenial, (14) neighborhoods where the family has lived in the immediate past, (15) whether father or mother, or both, are addicted to vicious habits, are feeble-minded, or are syphilitic, and (16) hereditary characteristics of ancestors.

Data on pupil's future plans include (1) whether pupil intends to graduate from high school, (2) whether pupil expects to attend college, (3) occupation pupil expects to follow after graduating, or after leaving high school, and (4) courses pupil expects to follow in college.

Remedial treatment.—In any successful endeavor to remove the causes of the problem pupil's undesirable behavior, and hence the reasons for his lack of growth toward the objectives established by the school, someone of high-grade intelligence with a broad background of experience must wrestle first with the facts which hold the secret of his objectionable

A Data are ranked in the frequency with which they are mentioned for the father. The same data fall in about the same ranks for (1) the mother, (2) other members of the family, and (3) boarders, roomers, servants, etc. Of course data are much more frequently mentioned as being collected for the father and mother than for other members of the household.

behavior. Having discovered the probable causes, the visiting teacher, school psychologist or other official charged with such duty often turns the direction of remedial treatment over to the principal, the home-room teacher, a counselor, or an adviser. Whoever assumes this responsibility performs the following duties listed in the order of frequency of mention: (1) Holds friendly conferences with the pupil when desirable or necessary, (2) recommends courses which the pupil should carry in school, (3) visits the home, (4) keeps informed concerning the pupil's progress, conduct, and attitude in school, (5) interviews the pupil's teachers, (6) sees that the pupil receives the clinical, medical, and health services necessary to correct or to alleviate remediable mental or physical defects or ill health, (7) keeps detailed record of pupil's responses to treatment, (8) calls conferences of faculty members who come in daily contact with the pupil.

The importance of knowing and of using facts.—Any adequate program to provide for individual differences begins with a study of the individual. In the outstanding schools of this investigation the staffs do not limit the collection of data to those pupils who have become so-called problem cases. In the words of one respondent "every pupil is a problem case with us." Each pupil who enters the school is studied continuously by means of tests, rating scales, check lists, and careful observation. His abilities, his weaknesses. his handicaps, his interests, his needs, his objectives, his experiential background, his hopes and aspirations are known and recorded. Such information serves not only as a ready and immediate basis for the preliminary study of pupils who have become problem cases; it also lays the foundation for all effective provisions for individual differences. Obviously, if this information is to be of maximum use, it must be recorded systematically and filed in such a way as to be readily accessible. For this purpose, in many schools the visible card index is supplanting the old-fashioned "blind" card files for such objective data as are collected for all pupils. The visible indexes are supplemented by 9 by 12 inch folders of the expansion type, one for each pupil.

In such folders is preserved valuable information concerning the individual pupil, which, because it is so very specific and detailed, can not be recorded economically on visible index cards. Needless to say, where adequate records of each pupil are accumulated from day to day and the data systematically studied and filed for ready reference, the individual becomes a known quantity. The educative environment in which he is placed and the educative influences to which he is subjected are no longer matters of guesswork or of chance; nor are they planned for some mythical "average" pupil. In the Thomas Starr King Junior High School of Los Angeles, may be found one of the most interesting examples of systematic accumulation of a large amount of significant data for each pupil in the school. The activities of teachers and supervisors are focused on a carefully planned effort to know the individual pupil and to preserve the facts acquired in a safer and more useful repository than memory's storehouse. The practices in this school are described in some detail in the report of the National Survey of Secondary Education on Aims and Activities of Supervisors.6

8. SUMMARY

The possibilities of variation in pubil load as a provision for individual differences can not be fully realized without the cooperation of accrediting agencies. Only a few schools are making extensive use of the procedure, but their evident success suggests great possibilities for the plan. In a restricted sense three-fourths of the respondents whose replies were tabulated are making some use of variation in pupil load. The procedure is employed somewhat more extensively in schools with enrollments of more than 100 than in schools with enrollments of fewer than 100, and much more extensively in schools which include only the lower secondary grades. Of 21 items likely to influence the decision as to the number of subjects a pupil should carry the "pupil's average scholarship marks in all subjects combined" and his "health" are most frequently considered.

^{*}See Monograph No. 11.

Only a fraction of 1 per cent of the pupils comprising the total enrollment of the schools studied intensively are carrying out-of-school projects or studies. The practice is considerably less prevalent in schools including only the lower secondary grades than in schools including the higher secondary grades. Schools enrolling from 101 to 500 pupils most frequently report the use of the practice.

Less than 1 per cent of the 8,594 schools from which replies were tabulated report frequent promotions as a provision for individual differences. The practice is much more prevalent in schools which include the lower secondary grades only than in those which include the higher secondary grades only. Its use increases regularly with increase in total enrollment until enrollment group of more than 1,000 is reached where the percentage of use decreases somewhat. Frequent promotions which are effective in providing for individual differences seem to consist of "continuous" promotions in connection with work organized on the basis of unit assignments.

Exploratory courses for pupil guidance are much more frequent in the reorganized schools and particularly in those reorganized schools including the lower secondary grades, than in the unreorganized schools. The extent of use of either exploratory courses or of advisory programs with minor exceptions increases regularly as the total enrollment increases.

Psychological studies include group and individual testing programs and a wide range of other studies all producing data of use in many types of provisions for individual differences. Such studies increase regularly with increase in total enrollment, and are much more common in the reorganized than in the unreorganized schools.

A sixth of all schools whose replies to the preliminary inquiry were tabulated are using the scientific study of problem cases as a provision for individual differences. Use of the procedure increases regularly as the total enrollment increases. Schools including grades 7 to 9, or 10 to 12, make considerably more use of the plan than schools of other types of organization. Trained personnel for the work seldom is allowed

the margin of time necessary for maximum results. Sixty-seven per cent of all pupils initially recommended for study as problem cases are recommended primarily because of retardation. A preliminary case study is made of the pupil on the basis of a large amount of data which outstanding schools now have available for each pupil enrolled. If the remedial treatment following the preliminary study appears to be meeting with little or no success, a complete case study of the pupil is made by the visiting teacher or the school psychologist.

CHAPTER II: PLANNING A PROGRAM TO PROVIDE FOR INDIVIDUAL DIFFERENCES

1. ELEMENTS AND DIFFICULTIES OF THE PROBLEM

A goal yet unattained.—This investigation has shown that only a small percentage of the 24,000 secondary schools in the United States are now realizing in their practices the best that is known in the matter of providing for the individual differences of pupils in abilities, interests, aims, and needs. Many other schools have been fast approaching the same desirable goal. Nevertheless, in most American secondary schools the battle against the evils of the lock-step and of mass production in education has only begun. In some schools, where most advance had been made, much ground has been lost recently as a result of the economic depression, the first efforts at so-called retrenchment often being aimed ignorantly and callously at the destruction of those agencies of the school by means of which the pupil may be recognized and taught as an individual. Yet in spite of temporary repulses which the schools in common with other social institutions have suffered, those in charge of our schools still press on toward the goal of universal secondary education adapted to the abilities, interests, aims, and needs of the individual boy or girl.

Elements of the program.—In his endeavor to establish an adequate local program to meet the needs of individual pupils the responsible head of a school is likely to compare his present procedures with the measures employed in outstanding secondary schools. Therefore he is likely to be interested in the fact that all measures to provide for individual differences, now in use in outstanding secondary schools, may be classified under seven categories, namely, (1) homogeneous grouping, (2) special classes, (3) plans characterized by the unit assignment, (4) scientific study of problem cases, (5) variation in pupil load, (6) out-of-school projects and studies, and (7) advisory or guidance programs.

Apparently these are the elements from which the program may be fashioned which will transform education in a given community from a monotonous, lock-step, leveling process of mass instruction into diversified educational procedures

adapted to the individual pupil.

The problems of each school unique. - In the matter of providing for individual differences each school presents specific problems in many respects unique. For this reason no intelligent school head expects to find somewhere ready-made a program of provisions for individual differences for his own school. He knows that an integrated program of provisions for individual differences adapted to his own specific school and community must be the product of thoughtful planning and experimentation with the local situation in mind. He and his faculty may get suggestions for their program from what other schools are doing, but they can hardly get a program. Schools vary in size, in type of organization, in racial, ethnic, social, and economic groups served, and in the degree of financial support locally accorded to education. These and other related variables too numerous to mention must be accorded due consideration in the development of a practical program to provide for individual differences in any given school.

The data set forth in the preceding chapters have shown that one or more modifications of each of the seven types of provisions for individual differences in use in outstanding secondary schools may be employed in schools of any type or size. In general, small schools make less adequate provision for individual differences than large schools not because any of the seven types of provisions for individual differences intrinsically are better adapted to schools of any particular size, but rather for reasons which are fundamentally eco-On the one hand the small school usually lacks, and under prevailing conditions can not afford, the variety of differentiated courses and curriculums which must accompany thoroughgoing efforts to meet individual needs. On the other hand, the small school is unable to employ the specially trained personnel whose services are essential to the proper functioning of a program to provide for individual differences. For example, in small schools the services of school physi-

cians, school nurses, visiting teachers, counselors, consulting psychologists, curriculum specialists, and specialists in research and measurement are usually inadequate or lacking.

Undoubtedly more could be done in many of these small schools than is being done. Apparently after consolidation has advanced as far as local conditions justify, the handicap of a restricted curriculum could be lessened further through (1) State-controlled correspondence courses and (2) cooperative endeavors with other neighboring small schools resulting in the joint employment of specialists in each of the several subject-matter fields, the time of each specialist being apportioned among the cooperating schools. Furthermore, the lack of other specially trained personnel might be remedied in a similar way. For example, a group of cooperating small schools often could afford to employ jointly such specialists as school physicians, school nurses, visiting teachers, counselors, consulting psychologists, curriculum specialists, or specialists in research and measurement, thus removing one of the chief obstacles encountered in the small school in the development of an efficient program to provide for individual differences.

Ensuing paragraphs not a substitute for the remainder of the monograph.—In the following paragraphs certain selected facts and relationships are reviewed in connection with each of the seven types of provisions for individual differences in use in secondary schools to-day. The final paragraph touches briefly on the relation of provisions for individual differences to procedures in marking and promotion. No attempt has been made to present in this brief chapter a comprehensive summary or review which may be regarded as a substitute for the remainder of the monograph. Yet an effort has been made to include in this chapter a number of facts and relationships which should be considered by those responsible for developing a program to provide for individual differences in a specific school and community. The treatment is necessarily brief, at times disconnected, and throughout likely to be misinterpreted by readers unfamiliar with the remainder of the monograph.

2. SOME OUTSTANDING FACTS AND RELATIONSHIPS

Homogeneous grouping.—So-called homogeneous grouping is a refinement of classification resulting in reduced heterogeneity. Homogeneous grouping is of most certain value to pupils of less than normal abilities; that is, it is an adaptation of the educative environment made for the pupil, hence pupils least able to make adaptations for themselves are most likely to profit wit. Homogeneous grouping is peculiarly a procedure for the junior high school since many pupils of less than normal ability usually have been eliminated before reaching the grades of the typical senior high school. If differentiation of instruction and subject matter, programs of exploration and guidance, and other features of a program to provide for individual differences in the junior high school should result in many pupils of less than normal ability being sent on into the senior high school, then homogeneous grouping would seem almost as imperative in the senior high school as in the junior high school. In other words, the more democratized secondary education becomes, the wider the range of usefulness of homogeneous grouping. The election of differentiated courses and curriculums in the senior high school grades produces a certain degree of homogeneity in needs, interests, and aims, if not in abilities.

Much controlled experimentation is needed to determine the relative merits of the many bases and combination of bases of grouping now in use. Many factors should be considered in assigning a pupil to a given homogeneous group. In academic subjects probably the principal numerical criterion should be the higher of two or more intelligence quotients. derived from two or more forms of a group mental test, supplemented by scores from reliable and valid prognostic tests in subjects where such tests are available. In nonacademic subjects probably the principal numerical criterion should be scores from tests prognostic of the pupil's ability to do work in the given field. All numerical criteria should be interpreted in the light of other available data concerning the pupil. Grouping on the basis of relatively unchangeable traits significant of the pupil's probable learning rate is preferable to grouping on the basis of relatively changeable

traits, since groups formed on the basis of relatively changeable traits at once tend to become heterogeneous.

Differentiation of teaching procedure for groups of varying abilities has proved much more feasible under practical public-school conditions than differentiation of subject matter. Back of the problem of differentiation of subject matter lies a virgin field of research into the nature of valid units of subject matter and their optimum sequence. Homogeneous grouping is applicable in schools of any size if grouping within the class section is practiced. Under this plan the class period is divided into alternating periods of directed study and class discussion for each of the several groups. A teaching plan characterized by the use of the unit assignment is a natural accompaniment of this type of homogeneous grouping.

Special classes.—Special classes begin where homogeneous grouping leaves off; that is, they are formed for those pupils who deviate most extremely from the norm in capacities, in needs, or in both. Special classes are provided about nine times as often for slow-learning pupils as for the very capable or gifted. The evidence suggests that "honors courses" may be a very acceptable alternative to segregated enrichment classes for the very capable or gifted. Special classes primarily for the very slow have been created because, when all other provisions for individual differences are functioning efficiently, a certain small percentage of the pupils do not succeed with the regular school work unless given additional help or motivation. Pupils highly heterogeneous in abilities, interests, needs, and sims find their way into classes for the slow-learning.

The most frequently considered bases for assigning pupils to classes for the slow-learning are teacher's rating of the pupil's academic ability or intelligence and the pupil's average scholarship marks in certain subjects. Six types of data are stressed in assigning pupils to special classes for the very capable or gifted, namely, industry, health, average scholarship marks in all subjects combined, intelligence quotient from a group test, physical maturity, and social maturity. Formulæ are avoided in determining whether a

pupil shall be assigned to a special class. Each case is handled individually in the light of the available data.

The facts suggest that special classes, like homogeneous grouping, are needed of tener in the lower grades than in the upper grades of the secondary school. Pupils are usually assigned to, or removed from, special classes for the slowlearning as occasion demands. Classes for pupils decidedly subnormal in native ability or for pupils who are very capable or gifted are created with the expectation that most pupils assigned to them will remain there permanently. Classes for slow-learning pupils are scheduled during the regular school day, before or after the regular school day, or on Saturdays. A scheduled period at the end of the school day is by far the most common procedure. During this period each regular classroom teacher coaches his or her own deficient pupils. Classes for the very capable or gifted, for serious behavior problems, and for slow pupils whose handicaps are regarded as native and permanent, are scheduled within the limits of the regular school day.

Special classes meeting within the limits of the school day present problems of program-making in small schools and increase the cost of operating the school, though, of course, they represent an investment and not an expenditure. A schedule of special classes meeting at the end of the school day offers at least the advantages of being feasible regard-

less of size of school or of financial resources.

The unit assignment is extensively used in special classes. Empirical modifications of the regular curriculum form the subject-matter basis for work done in special classes. As with homogeneous grouping, modifications of teaching procedure in special classes are much more frequent than modifications of subject matter.

Plans characterized by the unit assignment.—In practice a number of widely discussed plans, techniques, or procedures characterized by the unit assignment are essentially one and the same thing. The procedures are known variously as the project method, problem method, differentiated assignments, long-unit assignments, contract plan, laboratory plan, individualized instruction, Winnetka technique or some modification, Dalton plan or some modification, and Morrison plan

or some modification. Apparently the earliest of these terms was the term "project method" applied to certain phases of agricultural teaching. The idea of the project as something done for its own sake, the learning product being purely incidental, was extended easily to certain phases of home economics and industrial arts. The strenuous efforts which have been made to define the project in such a way as to include all teaching and learning units in all subject-matter fields have been superfluous if not absurd. The term "unit" is itself the most satisfactory comprehensive term. The project is one kind of learning or teaching unit. The term "problem" seems best reserved for that kind of unit in which the central feature is the abstract act of thought as defined by John Dewey.

A clear-cut distinction should be made between the unit and the unit assignment. The unit is regarded in this study as a concept, attitude, appreciation, knowledge, or skill to be acquired by the pupil, which if acquired, will produce a desirable modification of his thinking or other forms of his behavior. The unit assignment consists of those activities and experiences planned by the teacher to enable the pupil to master the unit. On the whole the practices of schools reporting the use of the Morrison plan, the Dalton plan, or the Winnetka technique are much alike, being attempts to develop classroom procedures adapted to the use of some form of the unit assignment. The unit assignment is certain to become a fundamental feature of any successful program to provide for individual differences. It possesses the extremely valuable attribute of being equally adaptable to schools and classes of all sizes and of all types

Scientific study of problem cases.—The individual pupil must be a known quantity if successful provisions are to be made for his particular needs. This fact is emphasized by efforts at the scientific study of pupils who have become problem cases. Moreover, the collection of accurate and comprehensive data concerning every pupil and the filing of these data for frequent and ready use are fundamental to all other features of a program to provide for individual differences. In outstanding schools each pupil's interests,

special aptitudes, aims, heredity, home environment, health history, school history, and many other significant characteristics and accomplishments, both physical and mental. are known and made a matter of record. In such schools serious problem cases occur infrequently but when they do occur the data are ready at hand for a preliminary case study. In these schools, furthermore, the services of a visiting teacher, counselor, or consulting psychologist are available if a complete case study involving the collection and interpretation of further data is necessary. The scientific study of problem cases is a provision for individual differences feasible in schools of all sizes and types. For financial reasons, however, a school may lack the necessary trained personnel to make possible the collection of sufficient reliable data, its proper filing, or its interpretation. Moreover, the needed facilities for the application of remedial treatment may not be at hand.

Variation in pupil load.—By variation in pupil load is meant variation in the number of subjects a pupil is permitted to carry for credit. Another type of variation in pupil load (not the topic of this paragraph) is also secured through the differentiation of unit assignments. Only a few schools are varying systematically the number of subjects which pupils may carry for credit as a provision for individual differences. The plan has met with evident success. Full realization of its possibilities depends upon the sanction of accrediting agencies.

Out-of-school projects or studies.—In schools awarding credit for out-of-school projects or studies only a fraction of 1 per cent of the pupils comprising the total enrollment are carrying such work. Although no extensive or unusual work is being done along this line the field seems to be a promising one. Out-of-school projects or studies are less prevalent in schools including only the lower secondary grades than in schools including the higher secondary grades.

Advisory and guidance programs.—Exploratory courses for pupil guidance are much more common in reorganized schools, and particularly reorganized schools including the lower secondary grades, than in unreorganized schools. The

extent of use of exploratory courses and of advisory programs with minor exceptions increases regularly as the total enrollment increases. Advisory and guidance programs have been made the subject of a separate monograph of this survey.

Relation of a program to provide for individual differences to procedures in marking and promotion. - In section 4 of The Scope the reader's attention was called to the close and inevitable relationship existing between provisions for individual differences and procedures in marking and promotion. Because of this relationship frequent references have been made to marking and promotion in the preceding chapters (as, for example, in sec. 4, Ch. II, Pt. II; sec. 5, Ch. III, Pt. II; sec. 4, Ch. IV, Pt. II; and sec. 12, Ch. V, Pt. II). In order that those who attempt to plan a program to provide for individual differences may find readily at hand suggestions for consistent and complementary procedures in the related fields of marking and promotion, this monograph is concluded with two chapters dealing, respectively, with marks and marking systems, and with plans for promotion. Although it is hoped these chapters may serve the purpose mentioned, nevertheless, they have been prepared with the thought that quite aside from all other considerations, procedures in marking and promotion, in and of themselves, merit most careful consideration.

¹ Monograph No. 14.

PART IV. MARKING AND PROMOTION

CHAPTER I: MARKS AND MARKING SYSTEMS

1. IMPORTANCE AND SCOPE OF THE STUDY

The importance of marks.—School marks have been the symbols of success and failure to generations of pupils who have struggled with the problems and tasks of the classroom, and to their parents who, indifferent at times to most phases of education, seldom have neglected the report card. At the bottom of the marking scale the "passing" mark has loomed large (to those taught by experience not to aspire higher) as the "open sesame" to new subjects, advanced grades, higher schools, and finally to the alluring opportunities of vocations and careers otherwise inexorably closed. At the top of the marking scale the difference between an A and a B, between 90 and 95, has been magnified immediately into the difference between unheralded mediocrity and the flatteries and satisfactions of scholarships, of "magna cum laude's," of memberships in famous scholastic societies; and later into the difference between ordinary success and the honors accompanied by attractive pecuniary emoluments which always have been associated with professional preferment. As long as school marks are issued, pupils, parents, and the world in general will regard them seriously. Hence a brief inquiry into what the secondary schools are doing in the matter of awarding marks should lack neither interest nor importance.

Scope of the present study.—The present study of marks and marking systems and the related study of plans for promotion reported in the following chapter are concerned with practices in selected schools. The method of selection insures that the established procedures to be reported are representative of best practices in marking and promotion in the secondary schools throughout the country. The data furnish an opportunity hitherto unavailable for teachers and supervisors everywhere to examine critically their own practices in the light of the best that is being done. In the ensuing

sections of this chapter the practices of the 258 schools selected for intensive study are presented under the following heads: Marking systems in use; recognized factors influencing scholastic marks; guidance of teachers in the awarding of marks; some substitutes for marks; and interpretation of traditional marks. The chapter on plans for promotion deals in turn with the following topics: The relation of marks to promotion, trial promotion, and rules and principles governing promotion.

1. SCHOOLS SELECTED FOR STUDY

Sources of data.—On the basis of replies from more than 2,000 individual schools, 48 State departments of education, and 227 city superintendents to preliminary general inquiries of the National Survey, 427 schools were chosen as likely to represent best current practices in marking and promotion. A comprehensive follow-up inquiry was addressed to these schools. From 273 replies, 258 were selected for intensive study. A number of the schools were later visited and further data were collected through interviews. Most of the statistical data as well as the illustrative material of this chapter and of the following chapter are drawn from studies of these selected schools. However, certain illustrative materials are drawn from other sources, namely, from three studies of marking and promotion reported in part in the preceding chapters of this monograph. In these studies marking and promotion were investigated in 289 schools selected primarily for outstanding practices in homogeneous grouping; in 178 schools selected primarily for outstanding practices in connection with special classes; and in 457 schools selected primarily for outstanding practices in connection with some form of the unit assignment. With certain interesting exceptions the practices in marking and promotion of these several groups of schools were found to be much alike. The reader will experience no difficulty in identifying in the succeeding sections those procedures, in connection with marking and promotion, which are peculiarly applicable to schools using homogeneous grouping, special classes, or the unit assignment.

Types of organization represented in schools-selected for study.—Of the 258 schools studied, 77 per cent are reorganized

schools, a third including grades 7 to 9. Twenty per cent include grades 9 to 12, and only 2 per cent include grades 8 to 11.

Size of schools selected for study.—The schools studied are predominantly large. Only 1 per cent has enrollments of 50 or fewer, while 46 per cent have enrollments of more than 1,000 and 75 per cent have enrollments of more than 500.

Recency of establishment of present marking and promotion systems.—A third of the schools report that the fundamental features of their present marking and promotion systems have been in use for 10 or more years. In other words, two-thirds of the marking systems studied have been developed during the past decade.

S. TYPES OF MARKING SYSTEMS IN USE

Forms in which marks are issued.—In four-fifths of the schools marks are issued in the form of letters or equivalent symbols such as Arabic or Roman numerals. (Table 1.) In a fourth of the schools percentages are used either alone or in combination with letters or symbols. In a tenth of the schools marks are translated into class ranks. Percentile ranks, written records or logs of pupils' progress, accomplishment quotients, and sigma scores are being used in only a very few schools. The excess of 100 per cent represented in Table 1 is accounted for by the fact that some schools issue marks in more than a single form.

TABLE 1.- Forms in which marks are issued

	Frequ	nency		Frequency			
Form	Num- ber	Num- ber	Percent				
Letters or other symbols Percentages	210 67 25 7	81 26 9 8	Written records or logs of pupils' progress	4 2 2	2 1 1		

The 5-point scale predominates in these schools whether marks are expressed as letters, Arabic or Roman numerals, or ranges of percentages. However, scales ranging from 2 points (satisfactory and unsatisfactory) up to the 100 points

of the percentage system are represented. Counting minor variations 100 different marking systems are in use in the 258 schools selected for study. Many of these differences are trivial and in their very triviality hard to justify on any other hypothesis than that "there is no accounting for tastes." For example, in one school plus and minus signs are used after all letters on the marking scale; in another school the plus and minus signs apply only to certain letters of the marking scale; in a third school plus and minus signs are not used at all. Or again, in one school the marks preferred are 1, 2, 3, 4, 5, in another school 5, 4, 3, 2, 1 and in a third school I, II, III, IV, V. Full advantage is being taken in this group of schools of opportunities for variety offered by an almost unrestricted use of the 26 letters of the alphabet; and exponents or subscripts add still greater variety in schools where homogeneous grouping is practiced. One can not examine the data thoughtfully and escape the impression that restless and often aimless efforts are under way to satisfy needs not at present met by existing marking systems.

Uniformity of practice within local systems.—Four-fifths of the schools report the same plan of marking to be used in all secondary schools of the local system, while only half report the same plan to be used in both the elementary and secondary schools. The fact that, in a fifth of the schools studied, a uniform practice in marking does not exist even within the secondary schools of the local system again reflects the existing uncertainty as to what the marking procedure should be.

4. RECOGNIZED FACTORS INFLUENCING SCHOLASTIC MARKS

Local studies of marking.—Marks originated as purported measures of scholastic achievement. However, evidence has accumulated during recent years to establish definitely that a mark in any given subject is often a composite of many factors, the least of which may be achievement in the subject matter of the course. The result has been a decided tendency in many schools to offer an increased variety of marks and ratings, one for each of the objectives being stressed by the school, apparently in the hope that if separate marks were

awarded for such factors as application, citizenship, deportment, health, and various social and civic traits, the subjectmatter mark might come to be less influenced by them, and to represent more faithfully what it purports to represent. namely, achievement in subject matter. Much of our knowledge concerning the influence of factors other than scholarship on scholastic marks has originated in studies of marking, promotion, and related topics conducted by the departments of research and measurement or by members of the local staffs of the public schools. Many such studies have been conducted or are under way in the group of schools now under consideration. Nearly half the schools report systematic studies of failure to have been made during the school year 1929-30; more than a third report studies of the distributions of marks awarded by teachers, by departments, and by the entire school; a fourth report studies of promotion; a fifth report studies of retardation; a fifth report studies to determine what the criteria for awarding marks should be; and 7 per cent report comparative studies of present marking and promotion systems with marking and promotion systems formerly in use. Needless to say such studies have materially helped local staffs to understand the composite nature of so-called scholastic marks and have often revealed the influence of obscure and generally unsuspected factors. For example, a mimeographed study submitted by the department of research of the city schools of Long Beach, Calif., shows that men teachers favor boys and women teachers favor girls in the awarding of marks. (Fig. 1-A and -B.) The curve for marks awarded by men teachers to boys occupies a position well above the curve for marks awarded by men teachers to girls so far as "A's" and "B's" are concerned, but the curves reverse their relative positions with respect to "C's," "D's," and "F's." In perfect contrast the curve for marks awarded by women teachers to girls lies well above the curve for marks awarded by women teachers to boys so far as "A's" and "B's" are concerned, and these curves also reverse their relative positions with respect to "C's," "D's," and "F's." Like futuristic question marks, the curves seem to ask "Why?" Apparently a pupil may improve his marks materially by the simple expedient of choosing teachers of

the same sex. In passing it should be noted that these findings are the reverse of the findings reported for university freshmen in a study made recently in Kentucky. The number of cases involved in the Long Beach study gives the data a high reliability. The difference in the ages of the students involved in the two studies may account for the difference in the results obtained. In any event here is a

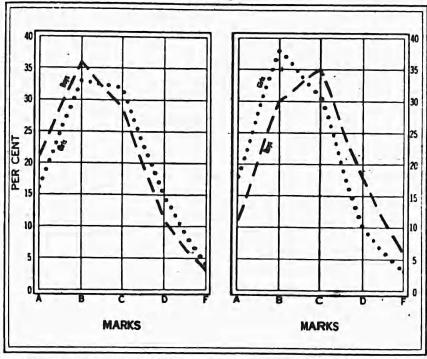


Figure 1-A.—Percentage distributions of marks awarded in all subjects by men teachers to boys and by men teachers to girls in the Long Beach, Calif., secondary schools. (Curves based on 22,410 marks for boys and 8,525 marks for girls)

FIGURE 1-B.—Percentage distributions of marks awarded in all subjects by women teachers to boys and by women teachers to girls in the Long Beach, Calif., secondary schools. (Curves based on 32,422 marks for boys and 49,702 marks for girls)

factor generally unsuspected which enters in a very real way into the mark which ideally should stand for one thing only, namely, scholastic achievement.

Attempts to isolate the factors of effort and native ability in achievement.—Unquestionably two important factors influencing achievement in subject matter are the pupil's native ability and his effort. Even if teachers' marks measured

¹ Educational Research Bulletin, The Ohio State University, Columbus, Ohio, 11:240-241.

with reasonable accuracy achievement or accomplishment in the subject, and nothing else, each mark would still be a composite concealing the relative amounts of effort and ability which it represented. Awarding a separate mark or rating of industry, application, or effort as is done in many schools helps the parent and other interested persons to " interpret the mark in accomplishment. However, another approach to the problem offers interesting possibilities. one had an accurate measure of a pupil's ability to do the work of a given subject-matter field and an accurate measure of his accomplishment in that field, he could derive mathematically a measure of the effective effort being expended by the pupil. That is, if one of two factors and their product are known, the second factor is obtained easily by the simple process of division. Even fairly reliable measures of the degree of effort expended by pupils in attaining a certain level of accomplishment should make marks more meaningful and promotion less mechanical. Hence, reference will be made to two attempts to derive a rough approximation of the amount of effort efficiently put forth by individual Both attempts are limited to academic subjectmatter fields and are based on the fairly high correlation known to exist between (1) either measures of academic intelligence derived from group mental tests or indexes of reading ability derived from standardized tests, and (2) ability to master academic subjects.

The first of these attempts was made in the John Hay High School of Cleveland, Ohio. The measure of the pupil's accomplishment is a composite of the pupil's ranks on a series of subject-matter tests prepared by the teacher. The measure of the pupil's ability to accomplish is his "probable learning rate" derived from a group mental test. The pupil's mark in effort is the quotient of the first measure divided by the second.

In a manner entirely different, the same idea has evolved into a "Pupil's Efficiency Chart" (Fig. 2) and a "Teacher's Efficiency Chart" (Fig. 3), in the senior high school of Trenton, N. J. The pupil's reading-ability index employed in the pupil's efficiency chart is based upon scores earned on the Chapman Reading Comprehension Test and the Inglis

Vocabulary Test. The pupil's "score," measured along the horizontal axis, is the composite of his ratings or marks in all subjects, each 1 being allowed four points; each 2, three, points; each 3, two points; each 4, one point; and each 5. zero. Since the maximum number of ratings in this school is five for any pupil in academic subjects, the maximum "score" is 20. Principal William A. Wetzel states that the pupil's efficiency chart, here reproduced in Figure 2, is based upon the actual "scores" of 1,300 pupils. Approximating a normal distribution, the lowest 10 per cent of the "scores" were designated as 5, the next 20 per cent as 4, the next 40 per cent as 3, the next 20 per cent as 2, and the highest 10 per cent as 1. From these data certain "efficiency paths" (marked off in Fig. 2 by heavy lines) were determined. The use of the chart may be illustrated as follows: Suppose a pupil with a reading-ability index of 140 or above has a score of 7 which would be obtained if he had received one 2 and four 4's. By reference to the intersection of the horizontal line of numbers opposite "reading-ability index 140-up" with the vertical line of numbers above "score 7" one discovers that the efficiency of the pupil in question is 5. That is, in efficiency the pupil ranks in the lowest 10 per cent of pupils of the same reading-ability index. The same score, however, yields an efficiency rating of 4 to a pupil whose reading-ability index is from 100 to 139, of 3 to a pupil whose reading-ability index is from 70 to 99, and of 2 to a pupil whose reading-ability index is from 0 to 69.

No claim is made by those who devised the chart that it furnishes more than a rough approximation of the pupil's efficiency. Nevertheless, it is a distinct advance over pure guessing. The fundamental principle of the chart is applicable to all fields. In such fields as industrial and mechanic arts, scores on mechanical aptitude tests might yield indexes of ability to achieve. Likewise reliable prognostic tests in any field might serve a similar purpose for work within the field for which they have been devised. Even for academic fields some may prefer to use as an index of ability to achieve a measure other than probable learning rate or reading-ability index.

In the senior high school of Trenton, N. J., the idea back of the device just described has been extended to produce a

[431]

140-mp	Reading bility		
140-up	TRUCK		
34 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	140-up 139 130 129 125 124 120 119 118 117 116 115 114 113 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 69 66 66 67 66 66 65 64 55	8 5 5 5 5 4 4 4 3 3 3 3 3 3 2 2 2 4 4 4 3 3 3 3 3 2 2 2 4 5 6 4 4 3 3 3 3 2 2 2 1 1 5 5 5 5 5 5 5 5 5 5 5 5 5 4 4 4 3 3 3 2 2 2 2 1 1 1 5 5 5 5	
	7	Score derived from marks earned by each punil in all subj	

FIGURE 2.—Pupil-efficiency conart devised and used in the senior high school, Trenton, N. J. (Marks used are A, B, C, D, and E; the numbers 1, 2, 3, 4, and 5 have been used in this figure because they reproduce better than letters)

1 2 3 4 5 6 7 8 9 10 11 12 18 14 15 16 17 18 19 20

"Teacher's Efficiency Chart" shown in Figure 3. In this figure the marks of 92 pupils in Course No. 12 B2a are plotted against their reading-ability indexes. The heavy line indicates the approximate average attainment, as measured by marks, of pupils of the various ability levels as measured by the reading-ability index. Therefore, every dot plotted left of the heavy line represents a pupil working below the average for his ability level. Similarly every dot plotted at the right of the heavy line represents a pupil doing work above the average for his ability level. Principal Wetzel says, "The chief value of the chart lies in the actual distribution of the ratings by each teacher after each six weeks' rating period and [the resulting] clear picture of [the extent to which the class has worked up to caracity. A rating of D or C for a pupil with reading-ability index 140 is as much a failure on the part of the teacher as an E rating at reading-ability index 70. The chart is a crude effort to center the attention of pupil and teacher on obtaining results commensurate with capacity."

The teacher's efficiency index is derived as follows: First, the median reading-ability index for the group is computed. The median in the present case is 85. Next, the norm for this median is computed. In this case the norm is 1.5 (midway between D and C). The total score (179) is then divided by the total number of pupils (92) which gives the average rating or mark for each pupil. This average rating is 1.95. Finally, the average rating is divided by the normal rating for the group giving a quotient of 1.3, the teacher's efficiency index. The normal or average efficiency index is 1. This index is not used for administrative purposes but helps to supply the teacher with a measure of the extent to which her marks are corresponding to the normal distribution within the school for pupils of like ability. Assuming the marks to be fairly accurate measures of the pupils' accomplishment, the teacher's index becomes a rough approximation of his or her relative efficiency in getting pupils to work up to the level of their abilities. Obviously, the device is open to abuse, a point which should be kept in mind if oile employs it. For example, a high efficiency index may mean that the pupils of a given group are accomplishing

more under a given teacher; or it may merely mean that the teacher marks more leniently than the average teacher in the school.

Attempts to define scholarship marks.—The respondents in this study have submitted a surprisingly large number of

Reading				Retin	E8 Y	í .		
ability index	. 2	D		c		В	A	Total
Under 50		Ţ.						1
50-54								
58-59				•				1
60-64	•••			:::				7
65-69		1	••	•				6
70-74	•	1	•	::		•		8
75-79]::	: .		•		10
80-84								1/5
85-89			1:				•	5
90-94		1	4,	::		• •		10
95-99		•		::		:	•	В
.00-104		1.						. 3
.05-109		•						2
10-114								6
15-119	•	1.						5
20-124		T			:		•	6
25-129								
30-134								1
35-139								
40 and over					1			
Total	6	T	21		44	1	7	92

Median R. A. I. 65 Horm for Median 1.5 Teacher's index 1.5

FIGURE 3.—Teacher-efficiency chart devised and used in the senior high school, Trenton, N. J.

carefully formulated definitions of scholastic marks. The purposes of the definitions are: First, to set up standards tending toward more uniform procedure among the various teachers in the awarding of marks, and, second, to inform pupils and parents of the meaning of the marks awarded.

The definitions without exception are disturbing if one believes that the scholarship mark so far as possible should be a measure of achievement and only of achievement in the subject matter of the course. The definitions plainly declare that the subject-matter mark is determined in no small degree by such factors as attendance, promptness, neatness, responsibility, and the like. Undoubtedly the idea intended to be conveyed to teachers, pupils, and parents by such definitions is that the factors just mentioned are positively correlated, perhaps highly correlated, with scholarship. But in the opinion of the writer the real effect of such definitions is to lead teachers to give unwarranted consideration to extraneous factors when awarding marks for scholastic achievement, and to lead pupils and parents to expect that such factors will be considered. As a matter of fact, pupils may maintain perfect attendance, be neat, trustworthy, prompt in meeting their obligations, and the like, and yet never be able really to earn an A in scholarship in any academic subject. The practice of issuing a separate mark, or rating, for each characteristic or trait in which growth is to be encouraged seems in every way preferable to the awarding of a single composite mark which, because it is composed of varying amounts of many ingredients, is in fact an unknown quantity.

Another important and related aspect of these definitions of scholastic marks, in terms of many extraneous factors, can be illustrated by reference to the following series of definitions of scholastic marks, which incidentally is the least objectionable from the writer's viewpoint of all series submitted.

Preparation

Mark

0

- A. Methodical, constant, exceeding expectations in supplementary assignments.
- B. Somewhat less energetic and original in supplementing assignments, and in making independent investigations.
- C. Adequate to meet the teacher's demands and suggestions; moderate amount of supplementary work on own initiative.
- D. Barely sufficient to cover minimum assignments; little or no supplementary work.
- F. Careless, partial, inefficient, indifferent.

Application

- A. Attention constant and concentrated; initiative expressed in ability to stimulate group accomplishment and to contribute to it, and in a high degree of originality in the pursuit of the subject.
- B. Same as above but slightly less marked.
- C. Attention satisfactory but not noteworthy; initiative appreciable when stimulated by reasonable encouragement and aid.
- D. Attention wavering, uncertain, fairly satisfactory; initiative so slight that much help and encouragement is needed on new work.
- F. Attention wavering, intermittent, not dependable, generally unsatisfactory; initiative, characterized by inability or unwillingness to follow directions.

Knowledge of the subject

- A. Superior in grasp, full and comprehensive, exceeding expectations.
- B. Same as above but slightly less marked.
- C. Moderate but sufficient to meet the teacher's requirements.
- D. Mastery of a bare minimum.
- F. Meager, fragmentary, and inadequate.

Use of English

- A. Extensive vocabulary, excellent diction, correct habits of speech.

 Rapid comprehension and interpretation of materials read.
- B. Same as above but less marked.
- C. Average in vocabulary, diction, speech habits, and ability to read with comprehension.
- D. Barely adequate in vocabulary, speech habits, and diction; deficient in power to read with comprehension.
- F. Deficient in vocabulary, careless in diction and speech habits, inferior in ability to read with comprehension.

Progress

- A. So rapid as to make the pupil an outstanding member of the group.
- B. Rapid but less marked than above.
- C. Steady and quite noticeable.
- D. Slow, plodding, barely sufficient to accomplish the tasks and goals set.
- F. Inappreciable.

In this series each mark is defined in terms of five criteria, namely, preparation, application, knowledge of the subject, use of English, and progress. No question will be raised here concerning the obvious overlapping of the five criteria. Nor will any question be raised as to whether marks for achievement in some subjects at least might be completely





independent of such factors as "use of English." Also such a paradox as "exceeding expectations" (under preparation, and knowledge of the subject for a mark of A) will be passed by lightly, although it is difficult to understand how any teacher can expect a pupil to exceed expectations. important aspect of all carefully formulated series of definitions examined in this study to be stressed at this point is that each series submitted, if not organized as a rating scale, readily lends itself to such an organization. In fact, the series of definitions reproduced above for purposes of illustration were not submitted in the form of rating scales, yet as now organized they form five fairly well-balanced rating The objection to such an arrangement is its definite assurance to pupils and parents that a pupil who receives an A ranks at the top of all five rating scales while a pupil who receives an F ranks uniformly at the bottom, and so on for the other marks. Thus the F pupil is supposed to show preparation, characterized as "careless, partial, inefficient, and indifferent"; application described by such phrases as "attention wavering, intermittent, not dependable, generally unsatisfactory," and "initiative characterized by inability or unwillingness to follow directions"; knowledge of the subject which is "meager, fragmentary, and inadequate"; use of English characterized by "deficient vocabulary, careless in diction and speech habits, inferior ability to read with comprehension"; and progress which is "inappreciable." Such a description of an F pupil's work in many cases is not only misleading but actually untrue and mischievous in its results. Since not all the foregoing statements are necessarily true of the F pupil it follows that if one desired to stimulate the pupil's growth from the standpoint of each of the five criteria then five marks should be awarded, one to represent his true position on the scale for each criterion. The point seems to deserve emphasis because of the wide-spread tendency, even in this group of selected schools, to make the subject-matter mark a composite of many factors other than schelarship and tacitly to advocate through elaborate definitions of scholastic marks that such a composite is desirable.

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Factors considered in awarding the subject-matter mark.—Although half the schools report that a pupil's mark in a subject depends entirely upon his accomplishment in the subject, many qualify their response with such significant words or phrases as "officially," "supposed to," "theoretically so," "not in the Z group," and "as much as is humanly possible." In 115 schools in which the mark is reported to be based entirely upon achievement in subject matter the median weights assigned to four factors in the semester mark are: Daily progress records, 40 per cent; term marks, tests given during the semester, and the final examination, each 20 per cent.

Of those respondents who state unqualifiedly that the mark in any subject is influenced by factors other than achievement or accomplishment in the subject, nearly all report the consideration of the pupil's industry, application, or effort, in awarding the subject-matter mark; about two-thirds consider his native ability and his attendance; and approximately one-third consider deportment, character traits, and citizenship. Other factors occasionally mentioned are the pupil's interest, and whether he is taking the course for the first time or is repeating it. Although the scholarship mark is admittedly influenced greatly by extraneous factors, nevertheless, typically, separate marks are awarded in these schools in industry, application, or effort, and in deportment, citizenship, or character traits.

6. GUIDANCE OF TEACHERS IN THE AWARDING OF MARKS

Sources of data and methods employed.—Data for guiding teachers in the awarding of marks in these schools are derived from the literature and from such local studies of failure, promotion, retardation, elimination, distributions of marks, criteria for awarding marks, comparative studies of marking systems, factors influencing marks, and attempts to define marks, as have been touched upon in section 4. The respondents mention several methods whereby the facts may be made to function in the actual awarding of marks. In more than four-fifths of the schools, individual or group conferences are held on methods of marking. The conferences are most frequently needed for teachers new to the system. More

than three-fifths of the schools report that in some of the conferences the distributions of marks awarded by individual teachers and by departments are discussed. More than half the schools report that printed or typed explanatory material on marking is issued to teachers. In 40 per cent of the schools the normal curve is used as a guide to teachers in the awarding of marks. Many respondents hasten to add, however, that the curve is not forced upon the teachers but is used as an aid to their judgment. A fourth of the respondents state that criteria have been established in each subject as guides to the teachers in the awarding of marks. A few schools report excellent results in the use of objective tests as aids to the teacher who is attempting to award more equitable distributions of marks. In all these respects the larger schools are surpassing the smaller schools.

Using the normal curve.—As stated, only 40 per cent of the respondents from the 258 schools being studied make any use of the normal curve as a guide to teachers in the awarding of marks. Practically all of these respondents report that the normal curve is not used in classes which are small or are known to vary considerably from the normal. This amounts to saying that they do not make the most effective use of the normal curve since many classes do vary considerably from the normal. The point seems to be rather generally overlooked, not only by the respondents but by writers on the subject of marking, that unless the normal curve can be made applicable to classes which deviate from the normal it is of little practical use to the classroom teacher. Fortunately the principle of the curve can be applied to any class no matter how far or in what direction the pupils may deviate from the norm in such vital traits as native ability, effort, or accomplishment, provided the teacher knows the nature, extent, and direction of the class deviation. For example, a procedure has been employed in the Thomas W. Harvey Memorial High School, of Painesville, Ohio, whereby graphical pictures are secured of each class with respect to native ability, previous accomplishment, and effort. The teacher then compares these graph's with the graph of the present

¹ Billett, Roy O. The Scientific Supervision of Teachers' Marks. A merican School Board Journal, 74; 47-48, February, 1927.

distribution of marks which she has awarded to the class. Use of the procedure implies no coercion of the teacher to make present distributions of marks conform precisely with either the curves of ability, accomplishment, or effort. The procedure is intended to be an aid to the teacher's judgment but not to replace her judgment in the matter of awarding marks. Only a few schools in which the normal curve is used report some such definite procedure in use for determining the extent to which each class varies from the normal.

Definite percentage distributions of marks are usually recommended to teachers in schools where the normal curve is used as a guide. In 73 schools using a 5-point marking scale the mean percentage of marks recommended for each portion of the scale follows rather closely the distribution recommended by Starch when the curve is conceived as extending two and one-half standard deviations on either side of the mean.³ (Table 2.) However, the range of recommended percentages for any given portion of the scale is strikingly high. For example, in some schools as low as 2 per cent of highest marks are recommended, while in other schools 16 per cent of highest marks are established as standard. In five schools using a 3-point scale the recommended distribution is 20-60-20.

Table 2.—Percentage distributions of marks recommended to teachers as standards in 78 schools using a 5-point marking system

Mark		nended stages	Normal distri-	Mark	Recomi	nended itages	Normal distri-	
	Range	Mean	bution		Range	Mean	bution	
1	1 1		4	1	3	3		
1 (highest)	2-16 13-40 30-60	8 21 43	7 24 38	5	9-46 1-10	20 7	. 24	

Periodical distributions of marks by teachers for pupils of their own classes.—Apparently one of the most effective methods of guiding teachers in the awarding of marks is the periodical distribution made by the teacher himself of the



¹ Starch, Daniel. Educational Psychology. New York, The Macmillan Co., 1919, p. 442

marks which he has awarded to his pupils. Back of this practice is the idea that each distribution should resemble a normal distribution or known reasons should exist for the observed deviation from normal. Usually the teacher prepares a separate distribution for each subject which he is teaching and a composite distribution for all subjects. Typically these distributions are made following each marking period though occasionally they are made only at the close of each semester. Two types of devices are in use to aid the teacher in preparing distributions of marks either for self-

JOHN HAY HIGH SCHOOL

DISTRIBUTION OF TEACHER'S MARKS

Teacher				-	
Subject					
Number	of "Ma	rke" .			
Date _					
P	ercenta	ge Dist	ribution		
100-93	97-85	84-78	77-70	60	
	Numbe	r Distr	ibution		
100-93	32-85	84-78	77-70	63-0	
resents	the hor	mal fr	indard. equency ph are p	distri-	

Figure 4.—Card used for the periodical distribution of teacher's marks, John Hay High School, Cleveland, Ohio

evaluation or for the information of administrative or supervisory officers. The first is a cross-section card or sheet on which the distribution accepted as standard for the school is outlined. In the John Hay High School of Cleveland, Ohio, a 3 by 5 inch card is used. (Fig. 4.) The teacher constructs on the card a graph showing the percentage distribution of marks which he or she has awarded to the pupils of a given class. Comparison with the accepted standard distribution for the school is then easily made. In this school the distribution 7-24-38-24-7 is accepted as standard. A separate card is used for each subject. Incidentally the

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card also illustrates how a percentage system may be transformed into a 5-point scale, the highest mark ranging from 93 to 100 per cent, the next highest from 85 to 92 per cent. and so on. Salinas High School of Salinas, Kans., uses a card almost identical to the one shown in Figure 4. The distribution set up as standard in Salinas, however, is 6-24-40-24-6 and the marks are the letters A, B, C, D, and F. In the J. M. Atherton High School for Girls, Louisville, Ky., six cross-section areas are mimeographed on a single sheet of letter-size paper, one cross-section area for each of the six classes taught by the teacher. A graphing device used in the senior high school of New Castle, Pa., differs from Figure 4 in that ranges of percentages of each mark to be awarded are outlined. The distribution 7-24-38-24-7 is recognized as standard, but the following ranges of percentages are outlined on the graph: 5-9, 18-30, 28-48, 18-30, and 5-9. Thus an effort is made to set upper and lower limits to the amount of variation which may be permitted from the normal distribution. Another feature of the card is a printed request that each teacher write on the reverse side of the card a justification of each A and of each E and of any lack of conformity of the B's, C's, and D's to the permissible limits.

The second device to aid the teacher in preparing distributions of the marks of his or her classes for comparison with the accepted norms of the school omits the graphical feature. (Fig. 5.) With this omission one card provides space for all subjects taught by one teacher. The card is self-explanatory. In the Langley Junior High School, of Washington, D. C., a somewhat similar 3 by 5 inch card is used for distributing marks at the end of each marking period rather than at the end of each semester. Percentages are calculated showing the proportion of pupils receiving each mark.

Distribution of marks in different ability groups.—A study of marking in 289 schools selected for outstanding practices in ability grouping, and already discussed in Chapters II to VI of Part I, showed that in 10 per cent of the schools marks were varied in one way or another for groups of different abilities. Usually an index or a subscript was employed, the favorite forms being either 1, 2, 3, or x, y, z. Of the 258 schools studied in the present chapter, 12 per cent vary marks

for groups of different abilities and 6 per cent vary marks for pupils in special classes. However, in many cases the real variable is not the mark out the content or degree of mastery for which the mark stands. That is, the same mark of A stands for the best work done in the Z group as well as for the best work done in the X group, a procedure likely to result in confusion and misunderstanding. The

Semester Enrollment In Studies and Failures In Each

Subject and	Enrollment			Re	Repeaters		Dropping			Remaining			Failures			s Pall.	
Classification	В	G	T	В	G	T	В	G	T	В	G	T	В	G	7	on No. Remair	
2 /2ti	27	3.6	.6.3	<i>5</i>	. ke .	u.	.0.	.1		27	25.	62	0	<i>3</i>	A	4.8	
12 Latina.	.7.	19.	28.	0.	0	0	Q	<i>1</i>	٠	.4.	1.8.	29	.0	2.	1	.7.4	
1 Latin	10.	12	22	.2.	0.	٦.	2		.پد	2.	12.	20	٠	1	.1	5	
***********				322											•••		
		+															

Indicate number receiving the following semester marks

Subjects	A	В	C	D	F
2' Latin	10	21	10	18	3
12 Ltin	6	7	8	4	2
1'Latin	5	8	5	1	1
Total	21	36	23	23	6

Date 6 - 5-30 Teacher Months Smith.

FIGURE 5.—Card used for periodical-distribution of marks in the Washington High School, Sloux Falls, S. Dak.

position assumed by the psychological and educational research division of the Los Angeles city schools on this point is significant. In presenting a new two-track course in plane geometry to be used in groups of different ability levels the committee says:

It is recommended that marks for pupils in the lower ability level be given on the same basis as those in the upper ability level; that is,

⁴ Two-Track Course in Plane Geometry. Los Angeles City School District, Psychological and Educational Research Division, 1931.

an A in one level will represent the same degree of attainment as an A in the other level, and so on for the other marks. The advantage gained in having pupils take the minimum course will be, therefore, not in the possibility of assigning high marks for minimum achievement, but rather in the possibility of pupils achieving more due to the fact that the materials of instruction are suited to their needs and abilities.

Letters with exponents are awarded as marks in the Mc-Kinley High School, of Washington, D. C. Only the marks for the highest level (A1, B1, C1, and D1) fulfill the requirements for college certification. A unique variation in marking for different ability groups is in use in the junior and senior high schools of Yakima, Wash. For these schools the report card is printed in four different forms, one form for each of three ability levels and a fourth form to be used with pupils in ungrouped sections. For pupils of the highest level the marks are A, B, C, D, and E; for those of the middle level, B, C, D, E, and F; and for those of the lowest level C, D, E, F, and G. Seven marks are used in all, A, B, and C being the highest marks in the three respective sections; C, D, and E being the average marks; and E, F, and G being the lowest or the unsatisfactory marks. For the ungrouped sections the marks A, B, C, D, and E are used. The definition of a letter or mark necessarily varies from one card to another. For example, B is defined as "excellent" on the cards for the middle group and for ungrouped sections, and as "above average" for the highest section. D is defined as "below average" in the highest sections, "average" in the middle sections and the ungrouped sections, and "above average" in the lowest sections. Obviously when these marks are entered upon the permanent records, if they are to have meaning, they must be accompanied by some device such as exponents or subscripts to show the kind of section in which the mark was earned.

In many schools the same series of marks each defined in but one way is used in all ability sections. Tentative standard distributions are often set up for each ability level on the assumption that more marks above average and fewer marks below average should be awarded in the highest sections and vice versa for the lowest sections.

Marking pupils' performance in nonscholastic fields.—The evidence submitted in this study shows that efforts are

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being made in the secondary schools to secure quantitative or qualitative ratings of pupils in all significant aspects of their activities and growth. The fact that mastery of subject matter is only one of the legitimate objectives of education is reflected in the increased number of items appearing on many report cards. These items include thrift; various forms of school service; detailed ratings in various phases of health, personality, character traits, and conduct; recognition of participation in the extracurriculum: and special commendations. Two devices are used to guide teachers in the extension of marking beyond the sphere of scholastic performance. The first is the rating scale. For example, in the Montclair Senior High School, of Montclair, N. J., confidential ratings are obtained from the teachers on certain traits of the pupil's personality. Such ratings are useful in helping the teachers and school officials to understand the pupil and in helping the principal or counselor to make fair recommendations of pupils to employers or to colleges. The following scale developed in Montclair Senior High School, may be cited as illustrative of an extensive movement to develop practical rating scales for traits significant for education.

- 1. Does he work steadily of his own accord?
 - () a. Does he seek and set for himself dditional tasks?
 - () b. Does he complete suggested supplementary work?
 - () c. Does he do ordinary assignments of his own accord?
 - () d. Does he need occasional prodding?
 - () e. Doesheneedmuch prodding in doing ordinary assignments?
 - () f. No opportunity to observe.
- 2. How does he control his emotions?
 - () a. Does he display poise in all situations?
 - () b. Is he well balanced?
 - (1) c. Is he usually poised in situations of moderate difficulty?
 - () d. Does he tend to be easily disturbed by trifles?
 - () e. Is he too easily upset?
 - () f. No opportunity to observe.
- 3. How does he meet situations?
 - () a. Does he face facts squarely?
 - () b. Can he face facts with slight assistance?
 - () c. Does he tend to face only facts which are obvious?

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- () d. Does he evade an issue?
- () e. Does he rationalize?
- () f. No opportunity to observe.



- 4. Does he get others to do as he wishes?
 - () a. Does he display marked ability to lead his fellows; does he make things go?
 - () b. Does he sometimes lead in important affairs?
 - () c. Does he sometimes lead in minor affairs?
 - () d. Does he let others take the lead?
 - () e. Is he probably unable to lead his fellows?
 - () f. No opportunity to observe.
- 5. How does he signify his desire for an education?
 - () a. Is he willing to make sacrifices of time and pleasure in order to meet his school obligations? '
 - () b. Is he interested in school work?
 - () c. Is his interest divided between education and amusement?
 - () d. Is he indifferent?
 - (') e. Is he opposed to school work?
 - () f. No opportunity to observe.

A second device used to guide teachers in the extension of marking beyond the sphere of scholastic performance is the point system. The point system may be focused on one phase of the pupil's growth and development such as improvement in social and civic qualities or it may deal comprehensively with all the objectives of the school. The merit system in use in the Woodrow Wilson Junior High School. of Pasadena, Calif., is an example of the former. The pupil receives 100 merits at the beginning of each semester. Merits may be earned during the semester for conduct indicating positive social and civic qualities and may be lost for conduct indicating negative qualities. The total number of merits retained by each pupil at the end of the semester is entered on the permanent records. When the pupil completes the work of the junior high school, the total number of merits which he has retained is divided by the number of semesters he has spent in school to reduce his civic-social record to a single index.

The point card of the Everett Junior High School, Columbus, Ohio (Figure 6), illustrates well an effort to extend marking to all the objectives of the school. According to a definite schedule, points may be earned through attaining . desirable standards in scholarship, attendance, physical improvement, and citizenship. Space is provided on the reverse side of the card for entering points earned as follows:

(1) Under the heading of scholarship, for (a) attaining the

honor roll at the end of any marking period or semester, or (b) securing honorable mention at the end of any marking period or semester; (2) under the heading of attendance, for having perfect attendance during any marking period or during any entire semester; (3) under the heading of physical activities, for serving on any school team or as manager or assistant manager; (4) under the heading of citizenship for holding office or membership in any of the recognized extracurriculum activities of the school.

~	PO	JUNI	OR		H 54		OOL		•				No.	-		_
Last test Pleat test. Bill	Hi ma										letion means					
	ALLOWED	1		-		1	late a	ad No	of P	00-11	Pard	1				
BCHOLARENIP			T						\mathbb{T}							I
A Myore-Each I or G		_1_		1			1_	_ _			_		_L	1		1
ti Mmore- Each E or G		_1_	1_	_ 1	1_1	_	_	_1.		-	1_1		_1_	_!_		1
C. Compleying Senester with no P. and with no more ti and F's Come Major and came Minor. Add enough to total is for me mester.				-												
ATTENDANCE				_!_			_	_1.	-1-		_	_	_!_	1		1_
A. Presence such report (I excussed sharees addressed)	- 3			4_					1					_ _		1
B. Prospeness esch report (I excused teriorises allered)			1	1					1	1			_	!		1
C Complexing Senetter (5 recreased absence adlowed) (6 encounds terfinence adlowed) Add encounds in make 200 ps.				1			ŀ									
IL PRITRICAL IMPROVEMENT	10			_1_	1_		1_		_ ii _	_!_	-		_ _	_!_		1
A. General condition each report.	1	1.	1_	_ _	1_	_	_	4	_1_	-1-	1_1		_!-	_!_	_1_	1
B. Cleantineess each report	- 14		_ _	_!_	-1-	_	_				_	-	_!_	_!_	-!-	Į.
C Participation such report			_ _	_!_	1_	_	_	_	_1	1				_!_	-	Ļ
D Completion of t ps. a nemetter		_	_!_	_!_	-	_	1_	4	_'_		_		_	1	1	1
V CITIERSHIP	10		_1_	_1_	1_	_	_	_1.	_1_		!_	_			-	1
A Courte oy, anch report				_ (_	1_	1_	I_	1_1	_1_	_		_			-	1
B. Care of peroperty, each resport (public aund personnel)														1		1
C Alertmens in routing, wheth report	1		_1_	_1_		1_	_	4		_!_		_		_ ! .		4
D. Helpfulmers, each report		1_1	_1_			_	_	_!_	_!_	_!_		_	_	_!_		1
E. Clab Activity, such report		_1	-	_1_	_	_		_	_!_	_!_	-	_	_!.	-	-	1
F Proper Recressional and Social Activity, such respect	-		ij,								1			1		1
G. Complexion is each incom above	1	1		_1_			_	_	_'_				1	_!-	-	1
otal				_1_	1_			_1	_!_		1_	_		_!_	1	1
dditional Points (Bog other side)				_1_	1_			1	_!		1_	_	1	1	4	4
rand Total												1		1	-	-1

Figure 6.—Point card used to extend marking into nonscholastic fields in the Everett Junior High School, Columbus, Ohio

6. SUBSTITUTES FOR MARKS

Purposes served by traditional marks.—In the opinion of certain proportions of the 258 respondents whose replies are included in this study the traditional school mark is serving at least 11 purposes. (Table 3.) Of the 11 purposes "keeping parents informed of the pupil's progress" leads the list. However, a small but significant percentage of the respondents believe that this purpose has not really but only

apparently been served. Other purposes recognized by three-fourths or more of the respondents 'are: "Furnishing a basis for promotion," "furnishing a basis for graduation," and "motivating pupils." Only a fifth of the respondents report school marks to have furnished a basis for research. These respondents represent schools with large enrollments. Concerning the schools reporting Item 10, "furnishing a basis for awarding credit for quality" a word of explanation is due. The term "credit for quality" was intended to have the meaning current in educational literature for a number of years, namely, the awarding of more or less than the normal number of units of credit for a given course if the mark earned in the course is higher or lower than the average. Analysis of the replies showed that practically all respondents reporting credit for quality had something entirely different in mind. By credit for quality they presumed to be meant the mere awarding of a mark higher than average. To be sure, in a sense this is credit for quality in that the pupil is recognized as being above average. Only one school in the entire group was found to have a thoroughly organized system of credit for quality in the accepted sense of the phrase. This school's practices are described in section 8 of this chapter. With the preceding explanation, Table 3 sets forth plainly the purposes which the respondents recognize as being served by marks in their schools. The reader must judge the extent to which these purposes are valid, and in considering the substitutes for marks which are being used in certain schools he must judge the extent to which the substitutes serve all valid purposes served by traditional marks and whether they meet additional needs not met by traditional marks.

Statements of mastery as substitutes for marks.—In the high school at Faribault, Minn., the work in geometry is being presented by means of unit assignments. A mimeographed report to parents lists the units of the course and gives the date on which the pupil masters each unit. Space is provided for remarks concerning the pupil's progress.

TABLE 3 .- Purposes served by marks in 258 schools

	Frequ	ency
Purpose	Num- ber	Percent
1. Keeping parents informed of pupil's progress.	244	95
2. Furnishing a basis for promotion	238	92
3. Furnishing a basis for graduation	212	82
4. Motivating publis	194	75
o. Furthsmug a cass for the awarding of nonors	190	· 74
6. Furnishing a basis for guidance in the election of subjects.	158	61
7. Furnishing a basis for guidance in college recommendation	, 155	60
riculum activities	133	52
9. Furnishing a basis for guidance in recommendation for employment	113	44
0. Furnishing a basis for awarding credit for quality	100	30
1. Furnishing a basis for research	50	15

A somewhat similar and more extensive experiment is under way in Bronxville, N. Y. The nature of the procedure is best expressed in the words of the superintendent, Willard W. Beatty. He says:

We have divided the work of each subject into 6-week units. Each unit represents what a majority of children have proved themselves able to complete in 6 weeks' time. It is of course an arbitrary standard—but we try to keep it at what pupils have done, putting forth real effort—not what some teacher assumes they ought to be able to do. Each 6 weeks it is therefore possible to determine how each pupil's progress compares with what a good normal student has done.

No student in our schools is marked complete originy "goal" if he fails to demonstrate knowledge of all the facts involved. Pupils who do this and no more receive a "rating" of P (passed) on junior and senior high goal cards, in ninth grade and above. We do not consider such students college material and will not recommend them.

Students who in addition to knowing facts, show a power to use these facts in the solution or the understanding of problems, are considered college material and are rated R (recommended). While this rating is in part subjective, we are striving to develop objective test situations which will reveal the distinction.

To be sure in a sense this amounts to a 3-point rating scale in which failure and two degrees of completion or mastery are recognized.

Principal Edward Berman reports that the shop work, drafting work, and some of the academic work in the Bayonne Vocational School, Bayonne, N. J., is organized on the basis of unit assignments. Each pupil works at his own rate on these assignments. When he completes a unit satisfactorily

he receives a credit certificate. (Fig. 7.) The statement or certificate of mastery, therefore, is at present replacing traditional marks in a few secondary schools. Does it serve all the purposes served by traditional marks as listed in Table 3? Does it introduce insuperable difficulties of administration? Does it meet additional needs not met by the traditional marking system? These are questions which the reader may answer for himself. A careful checking of the proposed substitute against the items of Table 3 may help one to reach a decision.

Informal letters to parents as substitutes for marks.—In spite of the importance attached to school marks by teachers,

	BAYONNE VOCATION	AL SCHOOL
ACA	DEMIC CREDIT	CERTIFICATE
This is to Certi	ify that	an in the second second second second second second second second second second second second second second se
has completed the wo	ork outlined under topic	······································
	department of thi	s school, and is therefore given credit fo
unit No	of the course prescribed for	graduation from this department.
Oiron thisday	y o/193	
		Instructor
		Principal

FIGURE 7.-A substitute for marks in the Bayonne Vocational School, Bayonne, N. J.

pupils, parents, and even the business world, murmurings against marks long have been abroad in the teaching profession. Some critics would operate at once and remove the mark completely as a useless if not vicious appendage to the bedy of present-day school procedure. Other critics recognize the mark as an evil but a necessary evil which may not be abandoned safely unless a satisfactory substitute is found. One administrator writes concerning marks in her school as follows:

We are far from being in a state of agreement in our own faculty concerning either the bases on which marks should be given or the number and kinds of marks to be used. In fact many of us are not convinced that the giving of fixed marks serves any useful purpose.

Whatever one's view concerning the usefulness of traditional marks may be, he is likely to greet with interest the statement that two respondents included in this study report the complete abandonment of marks in favor of letters to parents in which the individual pupil's needs and progress are outlined in necessary detail. In the first of these two schools to be mentioned the letters are written by the pupils and are often accompanied by notes or postscripts by the teacher. The following samples of letters issued in place of regular report cards by the retail-training department of the Girls' Vocational School, Minneapolis will convey a more accurate impression of this innovation to the reader than any amount of exposition.

E. M. is one of the younger and one of the better pupils.

DEAR MOTHER:

I am sending home this letter for you to read, to find out how I am getting along in my school work.

During this term I have not been tardy but have been absent three times.

My health is good but I need glasses to make everything perfect.

Since school has started I have worked 8 days 3½ hours and have earned 18 dollars 18 cents. The type of work I have done in stores is wrapping. I must be perfect in health in order to be a good prospect for the store.

My work in school is satisfactory. Miss D—— says I am outstandingly good in Textiles.

As a working prospect I would be better if I improved my English, and got a pair of glasses.

Your loving daughter,

E. M.

We find E. to be dependable, a willing worker, and a pleasant child.

D. V. D. (teacher).

E. H. is one of the very poor pupils:

DEAR MOTHER:

This report shows how my work stands for the last 10 weeks of school. The school doctor's examination shows that my health habits are two points below normal. I should take better care of my teeth.

I have worked 17 days and 6 hours. I have earned 35 dollars and 50 cents.

I need to make the following improvements. I could be very good in responsibility if I tried. My work is never in on time or not at



all. I am not accurate enough. My posture is good but I should watch it carefully because I am apt to slump down in my chair, which does not keep my posture good.

Your daughter,

E. H.

In the Thomas Starr King Junior High School of Los Angeles a similar experiment is under way. No marks or report cards have been issued in this school in three years. Letters are written by the teachers to the parents at regular intervals and at other times when necessary. Principal Alice Ball Struthers reports that during the three years the plan has been in use no complaints or destructive criticisms have been received. On the contrary the community has given increased cooperation and enthusiastic favor to the When the pupil is graduated from junior high school it becomes necessary to translate these letters into formal marks to satisfy the present requirements of accrediting agencies. However, this should present no greater difficulty to the teacher than the original estimation of formal marks. Sample letters and replies from the parents are reproduced below in place of further exposition.

NOVEMBER 21, 1930:

DEAR MRS. H---:

I am pleased to write to you again about Dorothy's work at school. She is an exceptional pupil and does superior work in practically every subject. The physical education teacher says Dorothy is 12 pounds underweight but this could possibly be attributed to the fact that she has grown rapidly.

Sincerely,

Note from parent in answer to above letter:

DEAR MISS T-:

I wish to acknowledge and thank you for your very levely letter concerning Dorothy's work as school, and am very glad to hear that she is doing so well.

Dorothy is very much interested in her work and I wish to thank you and her other teachers for the splendid help and teaching that she is receiving.

Sincerely,

November 4, 1931.

DEAR MRS. G-:

We are all very proud of Shirley's development in A 8. In all classes she is doing either very good or excellent work. She deserves credit for the effort she puts forward. She is very conscientious, reliable, and is a very fine girl in every respect.

Very sincerely,

Parent's reply:

DEAR MISS W---:

Mr. G—— and I were very happy to-night to receive such a satisfactory note from you, as a report of Shirley's work and conduct in school this term. She has been most enthusiastic over her study work at home and seems to be comprehending more easily. Let us thank you for your fine help and splendid interest in her. I hope to spend a day soon in her classes.

Sincerely,

NOVEMBER 24, 1930.

DEAR MRS. R--:

David's teachers have reported to me the results of his first 10 weeks' work and I find them quite satisfactory, especially in music, where he is doing superior work. His attitude, however, is not what it should be for he is not at all steady—he is very irresponsible and is apt to try to bother those around him when he should be studying. David is not a bad boy but I should like to see him settle down to business, sooner than he does, for his own good. Feel perfectly free to come to school to visit any time that it is convenient for you.

Sincerely,

Note from parent in answer to above letter:

DEAR MISS H---:

I hope to come and see you soon; in the meantime thank you so much for your letter about David. We are trying to cope with that same thing at home and interpret it as a tendency on his part to show off—and feel if he would only be made to see that it defeats its own end, we should have got a long way toward curing it. It is gratifying to us to know that you are interested in the boy.

With kind regards,

7. INTERPRETATION OF TRADITIONAL MARKS

Methods used.—One method of interpreting marks to pupils and parents, namely by means of definitions, has been discussed already in section 4 of this chapter. Such defini-

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tions as were submitted were found to describe marks in terms of so many variables and generalities as to be more the source of confusion than of understanding, although accurate and specific statements of the meanings of marks should constitute a valuable means of interpretation. The more successful efforts at interpretation of marks for pupils and parents have been efforts to express marks in relative rather than absolute terms. For example, pupils and parents quickly grasp the relative meaning of marks if methods involving ranking or graphic methods are used.

Ranking as a means of interpretation.—In the Maine Township High School, Des Plaines, Ill., an interesting "median method" of marking is used. The pupils of each class (consisting of one or more class sections) are first ranked in the order of their accomplishment as measured on a percentage basis. The median mark is then assigned a value of 100 after the manner of the intelligence quotient, where 100 is normal. By means of tables the remaining marks of the class are translated into values above or below 100 depending upon whether the mark is above or below the median.

In the Oskaloosa High School, Oskaloosa, Iowa, the pupil receives a mark in each of his subjects. In a space above his mark is entered the average mark of the class in that subject and in a space below his mark is entered the highest mark received in the class. A similar device is employed in the J. M. Atherton High School for Girls of Louisville, Ky. (Fig. 8.) However, in the school last named only the pupil's mark and the median mark of the class are reported. The principal states that entering the median mark has proved an incentive for girls to do their best. In the words of one of the pupils "It is hard enough to explain your own marks, let alone why you fell below the middle girl in the class in some of your marks."

Graphic methods of interpreting marks.—The graphic rating card used in the Fresno public schools is shown in Figure 9. For purposes of reproducing the card it was divided along the line where folded when in actual use. The left section of the card carries various ratings on 5-point scale in habits

^{*} See also Sec. 11, Ch. VI, Pt. I.

and attitudes. The right section carries ratings in scholarship. The points representing the ratings for the first

Form VIII-A. M. S.

LOUISVILLE PUBLIC SCHOOLS J. M. Atherton High School for Girls

EXPLANATION OF MARKS
G, scod, 80-87%. VG, very good, 88-84%
F, fair, 70-79%.
P, poor, 88-69%. VP, very poor, 0-84%.

Parents should view with concern mark indicating fair or noor.

Room N	umber					TER	RM	192
	T.	Bened	AC.	Pourth	78	Examination	Term	Parent's Signature
Days Present								
Days Absent								2
Times Tardy	_							3
English		,				•		<u> </u>
Median. for Class								5 -
Median for Class		_						6
Median for Class								Note—This report is sent to par- ents for the purpose of keep- ing them informed of the
Median for Class								punctuality and regularity in attendance as well as the standing and scholarship of the pupil. In order that per- ents may know the relation of their daughter's scholar-
Median for Class								class, the class median fol- lows the individual grade in each subject. Promotions are
Moffen for Class								based on the term grades which are made up from the monthly recitation and term examination grades.
Physical Training			•			Crefft		
Cherus						Oradit		-

FIGURE 8.—A report card comparing the individual pupil's mark with the median mark of the class

Signature of Principal.

semester are connected with a black line, those representing the ratings for the second semester with a red line.

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NAME

		CITI	ZENSHIP		
	Important H	sbits and Attitu	des Destrable i	n a Good Cit	izen
Explanation or Rating	Hostifa Habita	Work Habita	Social Habita	Play Habits	School -
Black or Blue 2nd Semester	Is Not in Pur- tion and Cloth- ing Good Practice Ensercises Regu- larly Takes Care of Teeth Is Clean in Behavior and Speech Does Not Use Provider and Rongs to Ele- can Practice Health Habits	Is Smedy, Nest, Attensive, Accurate Worker Sticker to Work Completes Work	Is Courtnous to Others Others Is Careful of Rights of Others Co-operates in Work and Play Is Cheurful, Helpful Keeps Promises Fractions Self Control, Adjusts Readily to Group Needs	Plays Fair Controls Temper La Good Team Member Libes to Play	Respects School, Property Respects School Regularions Is Careful of Own Property and that of Others Is Honest, Prompt, Loyal Takes Active Part in School Affairs
Superior					
Above Average					
Average -					
Balow				•	
Not Passing					

Left section of card

SCHOLARSHIP Graphic Ratings Show the Average for Each Semester Subjects	GRADE:		ST !				-		_	_	_	_	_	193		
Bud Grann. Bud Grann. Subjects Page 1 Ed. Page 1 Ed. Page 2 Ed. Page 2 Ed. Page 3 Ed. Page 3 Ed. Page 4 Ed. Page 4 Ed. Page 4 Ed. Page 5 Ed. Page 5 Ed. Page 6 Ed. Page 6 Ed. Page 6 Ed. Page 7 E					S	CH	OL	AR	SHI	P						
and Gram. Belence Internee In Eang. In Lang.	Graj	hic	Rat	ings	84	0W	the	Ave	rag	e fo	r E	ach	Seme	ster		
Bald Bald Bald Bald Bald Bald Bald Bald	Deplemental of Baring								Bubj	ects		٠			•	
	er Semester Graphed in lack or Blue and Semester Graphed in Red	English	par		Mathematics		Art		Shop	Music	10.100		,			
	Abore Average															
	Terage	-						-					H	F		
	Bolow Average													T		
Average Average Balow	t Passing	1					gb							1		

Figure 9.—Graphic rating card used in the junior high schools of Fresno, Calif.

Another interesting method of indicating graphically the pupil's position in his class in all subjects is employed in the Onaway Junior High School of Shaker Heights, Ohio. (Fig. 10.). An 81/2 by 11 inch sheet similar to that shown in the figure is sent home with each report card. From this sheet the parent reads easily the pupil's relative position in each of his classes. For example, in a class of 17 pupils in English, John Doe was 1 of 4 pupils to receive a mark of B; only 1 pupil received a better mark and 12 received lower marks; and so on for the other subjects. In some schools the distributions of marks as shown in Figure 10 are copied directly upon the report card and the appropriate numbers are circled. The procedure used in Shaker Heights seems preferable for at least two reasons. First, mimeographing the distributions saves a great deal of time which would otherwise be spent in copying the distributions on report cards. Second, if all the distributions are copied on the report card either no room is left for other data which outstanding schools are accustomed to report or the report card becomes inconveniently large.

A unique feature of the report card used in the New Trier Township High School, Winnetka, Ill., is a graphic arrangement for showing the pupil's percentile rank based upon the average marks earned by himself and the other pupils of the same sex in his class. (Fig. 11.) Only a portion of the report card is reproduced here. The check mark (in Fig. 11) shows that during the first month of school the pupil in question has a scholarship average which exceeded the averages of 77 per cent of the boys in his class, equaled the averages of 7 per cent, and was exceeded by the averages of 16 per cent. His average is not quite high enough to entitle him to honorable mention.

Ratings in various traits other than scholarship are often made intelligible by reproducing graphically the scale by means of which the ratings were obtained. (Fig. 12.) For example, the semester report of trait ratings given in the city schools of Pasadena, Colif., carries on the back of the card a copy of the rating scale.

One school in each 10 of the selected group studied is using some form of graphic method in reporting marks to parents.

8. SUMMARY

Three-fourths of the schools included in this study are reorganized schools and three-fourths, have enrollments of

DISTRIBUTION OF MARGE

CHARAY JUNIOR HIGH SCHOOL

SHAKER HEIGHTS, OHIO

GROUP 8B-7

Pupil's name John Doe

SEMESTER REPORT OF MARKS

JANUARY, 1931

	Mark											
Subject	Number in Classes	93-100	B 87-92	0 81-86	D 75-80	Below 75	Incomplete					
English	17	1	•		2	0	1					
Nathemat 1 cs	16	1	0	8	1	0	0					
Latin	19	3	5	7	4	0	1					
French	18	, 3	4	8	2	1	0					
Social science	16	2	(8)	6	.0	0	0					
Foods	23	2	14	7	0	0	0					
Mechanical drawing	14	1	111	2	0	0	0.					
Art	153	n	51	65	24	2	0					
lhisio	37	23	0	5	0	0	0					
Physical education - girls	48	3	22	23	0	0	0					
Physical education - boys	35	5	(25)	5	0	0	0.					

Figure 10.—Sheet used to show pupil's position in his class in each of his subjects, Onaway Jumior High School, Shaker Heights, Ohio

more than 500. Two-thirds of the marking systems studied have been developed within the past decade. Counting minor variations 100 different marking systems are in use in the 258 schools investigated. In a fifth of the schools a

uniform practice in marking does not exist even within the secondary schools of the local system. In four-fifths of the schools marks are issued in the form of letters or equivalent symbols. Percentages, alone or in combination with letters or other symbols are being used in a fourth of the schools. Class ranks, percentile ranks, written records or logs of pupils' progress, accomplishment quotients, and sigma scores

	rages are LOWER	1ec 2m2	5=4 4th 5	em	Major Subjects only are
bon's	son's	mo, mo i	no mo		A=4.00 B=3.00 C=2.00
0.	99.		닉닏	400	D=1.00 F= .00
1.	98.			3.75	Honor Roll ~ 3.20-4.00
2.	95.		ᆜ닏ᆝ	3.50	1 320 430
5.	91.			3.25	
9.	84.	بالال		300-	-Honorable Mention -3.00
16.	77.	$\mathbf{X} \cup \mathbf{I}$		275	
23.	67			2.50	
33.	55.			225	Cob and America 214
45.	44.			200	School Average -2.14
56.	32.			175	
68.	22.			150	
78.	14.			1.25	
86.	8.			1.00	
92.	4.] .75	
95.	2.			.50	Delinquent List00-100
98.	0.8			.25	/
99.2	0.0			7 .00 /	

Figure 11.—Unique feature of report card used in the New Trier Township High School, Winnetka, Ill. (Only a portion of the card is reproduced)

are being used only occasionally. The 5-point marking scale predominates.

Marks serve many purposes, the most frequently mentioned of which is "keeping parents informed of the pupil's progress." Other purposes recognized by three-fourths or more of the respondents are "furnishing a basis for promotion," "furnishing a basis for graduation," and "motivating pupils."

Statements of mastery of unit assignments and informal letters to parents are being employed as substitutes for marks with apparent success in a few schools. In most schools

GRAPHIC RATING SCALE FOR HARTS	Last Piret Kielly Beity	MINIMUM BATHOO AVERAGE MALINUM BATHOO BATHOO BATHOO Works regularly and on the bathon budgitess work habitally completes work habitally completes with best then badditionally and of three particular are of three particular	ment then processed ACOURACT Express bless consider the same former former than the same former former than the same former former than the same former form	make to differentiate Difficative Overcomes differentiate to the certainty Edges intellectual certainty in the certainty in the certainty in the certainty in the certain certainty in the certain certainty in the certain certainty in the certain c	MECANITY PARTS premies, chiquitans in the premies, chiquitans in the premies, chiquitans in the parts of the parts of the parts in the parts of the	the weeky group activities The control of the cont	and on a major may and on a major and a ma	by Vertical Control of the Control o	TOUTIONS: Loging the demand of the time is made in the second of the sec
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Semester Trait Rating Report Card

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Floure 12.—Semester trait-rating report card used in the junior high schools, Pasadena, Calif.

where ability groups are formed, the same series of marks is used in each group, with appropriate variations in the percentages of high and low marks awarded to pupils of each ability level.

In a few schools exponents and subscripts are used and in one school the same mark is defined differently in the different groups.

Many extraneous factors are influencing the scholastic mark. One of the less generally recognized of these factors is the sex of the teacher. The tendency to make the subject-matter mark a composite of many factors in addition to scholarship is being successfully counteracted by the extension of the marking system to include separate marks or ratings of the pupil in each significant aspect of his activities and growth. Rating scales and point systems are helping materially toward this end.

The main sources of data for the guidance of teachers in the awarding of marks have been the literature and local studies of failure, promotion, retardation, elimination, distributions of marks, criteria for awarding marks, comparative studies of marking systems, and factors influencing marks. Methods employed to guide teachers in the awarding of marks make use of group and individual conferences; printed or typed explanatory material; the normal curve; established criteria in each subject for the awarding of marks; and objective tests. Where the normal curve is being used effectively methods are employed to determine in advance of the awarding of marks the extent to which each class varies from the normal in those abilities and traits most significant for the probable learning rate. In the judgment of the investigator, the most successful efforts to interpret marks to pupils and parents involve ranking and graphical methods.

CHAPTER II: PLANS FOR PROMOTION

1. THE RELATION OF MARKS TO PROMOTION

The passing mark and promotion.—In nearly all schools studied the passing mark means promotion. In 40 per cent of the schools the teachers award failing marks without the necessity of consulting with, or reporting to, anyone in advance. However, in a third of the schools teachers are required to consult with others before assigning marks which mean nonpromotion or failure and in another fourth of the schools teachers must report in writing the reasons for each failure. Persons with whom teachers consult before awarding failing marks, in the order of frequency of mention, are: The principal, department head, pupil's home-room teacher, other teachers having the pupil in their classes, counselor, dean of girls, dean of boys, superintendent, and supervisor. Even where consultations or written reports are required, the general policy is to leave the final decision with the teacher except in those rare cases where an obvious injustice will be done the pupil if the teacher decides. Many factors are reported to be given careful consideration before the failing or passing mark is awarded. The data suggest that of all marks on the scale (Table 4.) the passing and failing marks are most influenced by factors other than scholarship. From half to three-fourths if the respondents state that the passing and failing marks are influenced by the pupil's effort, attendance, age, ability, handicaps, and the probable effect of promotion and nonpromotion upon his future success. Six other factors are listed in Table 4. In addition to all the factors just referred to, a few respondents also consider "the effect on the school or on the classes to which the pupil is promoted," and "the personal relations existing between the teacher and the pupil."

TABLE 4.—Factors considered before failing mark is awarded

		Per cent
1.	Extent to which pupil had put forth effort	69
	Regularity of pupil's attendance	
3.	Whether pupil was impeded by physical handicaps	. 66
	Probable effect upon pupil if promoted or nonpromoted	
5.	Whether pupil was impeded by home environment or othe out-of-school conditions	er
6.	Pupil's chronological age	
7.	Whether subject matter was unsuited to pupil's ability	. 53
	Whether pupil was impeded by language handicaps.	
	Whether pupil had been subjected to frequent transfer from one school to another during the term	m
10.	Pupil's standing on standardized tests	
	Whether subject matter was unsuited to pupil's interests	
	Pupil's citizenship and character traits	
	Whether pupil had received unusually poor teaching	
	Whether class-section was undesirably large	

Lowest marks accepted for credit, for graduation, and for recommendation to college. - Almost without exception the lowest mark accepted for credit in a given course is the same as the lowest average mark required for graduation. However, the lowest mark accepted for credit and for graduation is usually 1 point lower on a 5-point marking scale than the mark accepted for recommendation to college entrance. Since a considerable proportion of schools studied use percentages, and other schools using letters or symbols frequently give the percentage equivalents of their marks, it was possible to state quantitatively the three marks referred to above. The median "lowest mark" (based on replies from 133 schools) accepted for credit in a given course in the schools studied is 73 per cent. The median "lowest average mark" accepted for graduation from high school is also 73 per cent. But the median "lowest average mark" accepted for recommendation to college is 83 per cent.

Cumulative marks.—Only one school system reported the use of cumulative marks. In the junior high schools of Trenton, N. J., the mark appearing on the pupil's card at the end of the semester or year is an automatic indicator of promotion or failure. This is the result of making each mark "cumulative" from the beginning of the year or semester to the date the mark is issued. For example, the mark issued

at the end of the first marking period covers the work of that period, but the mark issued at the end of the second marking period covers all the work of both periods, and so on.

Credit for quality.—The awarding of "credit for quality" has been advocated for a number of years. The practice is well established in only 1 of the 258 schools studied, namely, the Senior High School of Lincoln, Nebr. In this school the teacher marks the pupil on a 7-point scale. (Fig. 13.) A mark of "1" is given 1.2 times the normal amount of credit; a mark of "2," 1.1 times the normal credit; a mark of "3" or "4," normal credit; a mark of "5," 0.9 times normal credit; a mark of "6," 0.8 times normal credit; and a mark of "7," no credit at all. Opponents of credit for quality state that the practice allows credit twice for the same performance. The "A" for example is credit, in the sense of "recognition," for quality and the extra units represent an unnecessary and gratuitous reward. They also argue that the high-school course usually requiring 16 units for graduation is already too narrow. Yet under a system of credit for quality the bright pupil earning all "A's" might offer only 13 units for graduation. However, consideration of the topic at this time is concerned primarily with the effect upon promotion. Obviously, credit for quality tends to lessen the blow of complete failure by awarding partial credit for work which under the regular system of marking might be designated as nonpassing. A similar result so far as promotion is concerned is obtained by courses organized for slow-moving groups (sec. 9, Ch. VII, Part I); by continuous promotion in connection with the use of the unit assignment (sec. 4, Ch. I, Pt. III); and by variation in the number of subjects which pupils may carry, the more capable pupils carrying more than the normal load, and the less capable pupils less than the normal load (sec. 2, Ch. I, Pt. III).

Cooperative efforts to prevent failure.—Most of the respondents send out "warning reports" or reports of unsatisfactory work in an effort to keep the pupil's work up to a standard justifying promotion. The reports vary greatly in content and comprehensiveness. Collectively, however, these reports represent efforts to secure cooperative action of the pupil, parents, teachers, and supervisors in a combined attempt to

improve the work done by the pupil and to insure promotion. In all cases the warning report originates with the teacher in whose classes the pupil's work is unsatisfactory. The report is addressed to the principal or to some one delegated by him to give attention to such matters. The report states the subject in which unsatisfactory work is being done and is often accompanied by samples of the pupil's written work including written examinations. A wide range of data having a possible bearing on the case may accompany the report. These include the pupil's age, grade, intelligence test score, intelligence quotient, achievement-test scores,

Report of standing	(Make a	l) em	tries	in	ink)					H.R
Pupil'	Name	2	3	4	5	6	7	INC.	ln	Subject
EXPLANATION: The pupil's standing on the 1. Excellent 2. Very Good	number date ind 3. Hig 4. Av	h A	Vers.	go	LDe	S,	Bek	a draw name. w Aver	uto	7. Falling
1-17		-	-	of	house			35134.57	149.0	
	i 12 the splanation			-		-	raco	depend	00	the sensiter mark. (
In grades 10, 11 and	f 12 the	_	_					Class '		

rank in class, and previous marks earned in the same and other subjects during the semester. Usually an effort is then made to state specifically the causes of the deficiency. Sometimes these statements are checked on a previously prepared printed or mimeographed check list. Practice favors, however, the listing of specific items, usually under printed general headings rather than the use of a detailed check list. Whichever practice is followed, the items deal with the pupil's health, general and special abilities, interests outside of school, attitude toward school work, lack of books or supplies, attendance, and any other points which seem to have

quality" is allowed



a bearing upon the case. Sometimes the pupil helps to analyze his own case through answering a specially prepared list of questions. Next the teacher may suggest remedies for the difficulties observed. Occasionally a weekly study program for work both in and out of school is outlined in the warning report. The teacher often lists what he or she has done outside of regular class instruction to help the pupil. When the report goes home both the parent and pupil may be asked to sign it and each may be requested to indicate those respects in which he can help.

In the Creston High School of Grand Rapids, Mich., special blanks are provided on which the pupil's marks may

CRESTON HIGH SCHOOL

Study	Standing	Comments	Teacher's Signatur
R. Teacher			
		suggestions that may aid in impro e school for conference.	wing work of the pupil, an
	gnature	S. R. Toucher's Signature	Parent's Signature

be reported to the home daily or weekly as an immediate incentive to the pupil to improve. (Fig. 14.) A blank like the figure in all respects, except that the word "weekly" is changed to "daily," is used to report the pupil's work at the end of each day.

Typical of the efforts in many schools to prevent failure (and hence to insure promotion) is the procedure of Lafayette Junior High School of Uniontown, Pa. In this school before a pupil may be given a failing mark, the following conditions must be met: A warning report must be sent

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home to give the parents an opportunity to use their influence to improve the situation; this warning must be repeated each week, if work continues unsatisfactory, until the regular report cards are issued; the teacher must confer with the pupil to determine the cause; the teacher must become informed concerning home conditions; the principal must confer both with the pupil and with the teacher; the teacher must file in the office a written report of the cause of failure.

Obviously, although the failing mark is the outward symbol of nonpromotion in nearly all these schools, no pupil receives a failing mark until strenuous efforts have been expended in an attempt to bring his work up to a standard which merits promotion. In these endeavors many factors other than scholastic achievement are given careful consideration.

1. TRIAL PROMOTION

Extent to which trial promotion is practiced.—Even when a failing mark must be awarded, in more than half the schools studied a number of pupils who have failed are given trial promotions. In these schools the proportion of pupils so promoted averages approximately 2 per cent of the total enrollment.

Results of trial promotion. On the average about 30 per cent of all pupils promoted on trial or probation succeed in the advanced work. Specific data may be cited from the junior high schools of Baltimore, Md., where experience with trial promotion has beer wide, favorable, and successful. Results throughout the city may be illustrated by data from Junior High School No. 47 for the year 1929-30. Of 535 pupils from grades 7 A, 8 B, 8 A, 9 B, and 9 A given trial promotions, 396 maintained their trial status throughout the semester, 92 were demoted, and 47 withdrew from the school. At the end of the semester, of the 396 pupils who maintained their trial status, 184 were promoted. Thus 47 per cent of the number retaining trial status, or 34 per cent of the original 535 given trial promotion, proved successful in the advanced work. These percentages are certainly high enough to justify the rather elaborate precautions described in section 1 to avoid assigning the failing mark to any pupil

likely to succeed in advanced work if given a chance. Similar data have been submitted from other Baltimore junior high schools. The report from Junior High School No. 47 was accompanied by the following statement bearing on local procedures in trial promotion:

Ordinarily, pupils who fail in not more than two major subjects at the close of a semester are promoted "on trial." The parent of the pupil "on trial" is notified by card. This card is followed up three weeks later by another card if the pupil is not making satisfactory A week later it is probably found necessary to demote a few of the "on-trial" pupils whose lack of application is apparent by their failure to make good not only in the subject or subjects which they were to make up but also in other subjects of the grade. Usually after that, extra effort is made by the remaining "on-trial" pupils. In most cases the deficiencies in the subjects in which the pupil failed must be made up. This is done before or after school hours. Sometimes satisfactors angress in the subject in which the child had failed will be considered sufficient to remove the "on trial" condition. The follow-up of the "on-trial" pupils is done by members of the vocational counselor's department, who confer from time to time with the principal as to progress. No demotion is made without his permission. Occasionally pupils are demoted and yet allowed to "travel," that is, they continue for a while longer to move with the class of the advanced grade, though they are enrolled in the lower grade. Usually they make

Systematic records of pupils on trial.—The probationary promotion card in use in the Everett Junior High School Columbus, Ohio, is the result of an effort to maintain a systematic record of each pupil promoted on trial or probation. (Fig. 15.) The reverse side of the card is ruled in the same fashion and carries the same headings as those shown in the figure.

8. RULES AND PRINCIPLES GOVERNING PROMOTION .

Subject-matter unit of promotion —In 85 per cent of the schools studied the subject-matter unit of promotion is the individual subject. In the remaining schools it is all the subjects of an entire grade.

Intervals of time at which promotions are made.—In 63 per cent of these schools pupils are promoted each semester, in 30 per cent each year, and in 7 per cent continuously. In 1 school promotions are made each 12 weeks. Continuous promotion is not the uniform practice in any school studied.

In a few schools promotion is continuous for all pupils in certain subjects which have been organized on the basis of the unit assignment. Yearly promotion is characteristic of small schools and promotions each semester are characteristic of large schools, 90 per cent of schools with enrollments of 51 to 100 promoting annually as compared with 18 per cent of large schools of more than 1,000. A few schools report

PROBATIONARY PROMOTION CARD

FOR INDIVIDUAL PUPE.

Everett Junior High School, Columbus, Ohio

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Figure 15.—Individual-record eard for pupils promoted on trial in the Everett Junior High School, Columbus, Ohio

continuous promotion in the case of exceptional and handicapped children.

The good of the individual.—Rigid rules regarding promotion are not only nonexistent but are entirely incompatible with the practices actually existing in these schools in connection with marking and promotion. Principal Louise A. Merrill, in reporting concerning promotions in the Byers Junior High School, of Denver, Colo., adequately reflects attitudes toward promotion in the schools studied. She says:

We have no particular rules regarding promotion but we follow certain procedures. Pupils are promoted by subject and no pupil is

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held back because of failure in one subject. He is given the program of the next grade and the subject which he must repeat is substituted for the same subject in the new grade. Sooner or later he must do a semester's work in summer school or with a private tutor, or when he reaches the ninth grade substitute the subject for an elective. We have few failures compared to the total number of pupils. We have practically no "drop-outs" because of failure. Most pupils leaving Byers either take part-time work in the opportunity school or in the night school that they may enter gainful employment during the day. Individual cases of failure are given careful attention by the counselors.

Children who wish to make up an advanced subject are put on an "acceleration program." Over-age pupils whose intelligence quotients are 90 or above are given special promotions in such subjects as industrial arts, music, art, and gymnasium. These subjects are replaced by the required subjects of the advanced grades. The pupils who work on this scheme must attend summer school where they follow subjects prescribed by the director of the accelerated group. They thus save sometimes a year and always a semester and are able to enter a group of their own age.

The preceding quotation sums up the spirit in which the problem of promotion is approached in all these schools. In the first place, promotion becomes a problem with only a small percentage of the pupils. In the second place, each pupil is treated as an individual and every means is employed consistent with his own welfare and the welfare of the groups to which he belongs to enable him to proceed at a normal rate.

Certificate courses for pupils unqualified to pursue diploma courses.—Twenty-one, or 8 per cent, of the respondents state that pupils who complete a given curriculum to the best of their abilities, yet fail to attain the standards for a regular diploma, are given a special certificate. In 13, or 5 per cent. of the schools, special certificates of attendance are awarded to pupils who attend school the normal number of years required for graduation and who for any reason do not satisfactorily complete the work required for a diploma. In the senior high school of Pawtucket, R. I., three types of diplomas are awarded, the type awarded to each pupil being determined by the ability group in which he does his work and his rank in class. In the junior high schools of Los Angeles, a "diploma of graduation" is awarded to pupils who are satisfactory in citizenship and who have passing marks in the prescribed 160 periods of required and elective courses. A certificate of promotion may be granted pupils on

the completion of a junior high school course planned for pupils not qualified to do the regular work of the junior high school. A "transfer to senior high school" may be issued to pupils failing to qualify for either the diploma or the certificate but who have passing marks in 150 periods of work of which 40 are in ninth-year subjects, including 5 in English. The junior high school diploma or certificate may be awarded later to such pupils when they have met the necessary requirements.1 The idea of separate types of awards is extended also to the senior high schools. Any one of three types of awards may be given to a pupil upon completion of the senior high school work,2 namely, (1) a diploma of graduation, (2) a certificate of completion, and (3) a letter certifying attendance. Each of these awards is based upon good charac-The second award is based upon reter and citizenship. quirements less rigid than those upon which the first award is based. For example, in work done for the first award a major must be included in one of certain specified fields, approximately half the total credits required for graduation must be earned in upper-grade subjects, and no credit is allowed for less than one year of work in any subject except those regularly scheduled for less than a year. None of these requirements is specified for the "certificate of completion." The third award may be given to pupils who are 18 years of age or over and who have completed one course in English, one in social studies, and other work planned for the pupils' individual needs and capacities.

4. SUMMARY

In nearly all schools studied the passing mark means promotion. In the last analysis it is the teachers who usually decide who shall pass and who shall fail, although often they are required to consult with others before awarding a failing mark, or to make a written report stating the reasons for each failure. No pupil receives a failing mark before strenuous efforts have been made to help him to bring his work up to a standard which merits promotion. Practically all schools report cooperative efforts of the pupil, parents,

1 Ibid., pp. H-18,0

¹ Graduation Requirements and Curricula, Los Angeles City School District, School Publication No. 225, 1982, pp. 5-6.

teachers, and supervisors to prevent failure. From half to three-fourths of the respondents state that the passing and failing marks are influenced by the pupil's effort, attendance, age, ability, handicaps, and the probable effect of promotion or nonprome on upon his future success. Eight other factors are mentioned. The typical mark accepted for credit in a subject is the same as the typical average mark required for graduation. But the typical average mark required for recommendation to college is 10 per cent higher than the mark required for credit or for graduation. Trial promotions are employed in more than half of these schools. About 2 per cent of the total enrollment are so promoted and about 30 per cent succeed with the advanced work. Only one school is awarding credit for quality. The individual subject is the subject-matter unit of promotion in 85 per cent of the schools. Promotions are made each semester in the larger schools and each year in the smaller schools. Promotion becomes a problem with only a small percentage of pupils and each case is treated individually. Rigid rules regarding promotion are nonexistent and incompatible with the principles governing promotion in these schools. A small percentage of schools are awarding "certificates of completion" or "certificates of attendance" to pupils who can not meet the requirements for the regular diploma.

