TESTING PRACTICES OF HIGH-SCHOOL TEACHERS

By

J. MURRAY LEE

Director of Research, Burbank, Calif., City Schools

and

DAVID SEGEL

Educational Consultant and Specialist in Tests and Measurements
Office of Education

Bulletin, 1936, No. 9

UNITED STATES DEPARTMENT OF THE INTERIOR - *Harold L. Ickes*, Secretary

OFFICE OF EDUCATION - - - - - - - - - - - - - *J. W. Studebaker*, Commissioner

UNITED STATES GOVERNMENT PRINTING OFFICE - - - - - - - - - WASHINGTON : 1936

For sale by the Superintendent of Documents, Washington, D. C. - - - - - - - - - - Price 10 cents

CONTENTS

FOREWORD

In order to make an intelligent advance in any school practice a knowledge of what schools are doing in that practice is almost indispensable, since a transition in procedures must be a growth from the one to the other. This bulletin gives this background of facts concerning the use of tests and examinations by the different subject departments in high schools. It considers these facts and makes suggestions for the improvement of the procedures found.

The variations in testing practices among different departments are considerable, reflecting the types of standardized tests available in the different subjects, and the ability and interest of teachers in constructing and using different types of tests.

This bulletin should be of value, first of all, to high-school principals, heads of departments, and progressive high-school teachers, since it describes testing practices in schools and makes suggestions for their improvement. It is our hope that it will be of use also to curriculum workers, to persons interested in devising tests for the secondary field, and to instructors in teacher-training institutions.

BESS GOODYKOONTZ,
Assistant Commissioner.

TESTING PRACTICES OF HIGH-SCHOOL TEACHERS

CHAPTER I: INTRODUCTION

THE PURPOSE of this pamphlet is to present a detailed analysis of the testing practices of secondary school teachers as reported by the teachers themselves. This analysis is based on the results of a survey of the practices of some 1,600 secondary school teachers in various sized schools and distributed widely in the United States. These 1,600 teachers represent high schools in which the administrator in charge was willing to cooperate and have his teachers answer a questionnaire regarding their testing practices. The practices reported represent, probably, a sampling of the more progressive schools in this regard.

The questions on which the data from the questionnaire furnish information are:

1. How often do teachers give tests?
2. What types of questions do teachers use in their self-made tests?
3. What are the practices of teachers relative to final examinations?
4. Who corrects the tests?
5. What uses do teachers make of tests?
6. What are the attitudes of teachers toward the giving of tests?
7. What are the attitudes of teachers toward various types of tests?

The data taken from the questionnaires could have been classified on the basis of different sized schools or communities, but it seemed best for practical purposes to present the material classified on the basis of subject departments. These subject departments are: English, social studies, mathematics, science, modern foreign language, Latin, commercial studies, industrial arts, home economics, fine arts, and physical education. The number of teachers within each department varies slightly from question to question, for some teachers did not answer all questions.

74061°—36—2

CHAPTER II: HOW OFTEN DO TEACHERS GIVE TESTS?

THE DISCUSSION of the frequency of testing deals with teacher-made tests, short quizzes (less than 15 minutes), and standardized achievement tests.

Teacher-made tests.—The median number of teacher-made tests given by a teacher during the semester is 7.6. Table 1 not only includes the median number of tests given in each department, but also gives the percent of the teachers who gave from 0 to 7 tests, from 8 to 15 tests, and 16 or more tests. The inclusion of the percentages in the table makes possible comparisons which would be hidden through the use of the median alone. It is not especially surprising to note that the mathematics department gives the largest number of tests, 10.5, or that fine arts gives the smallest number, 3.4. The mathematics, science, and commercial departments give the largest number of tests, while the industrial arts, physical education, and fine arts departments give the smallest number.

TABLE 1.—FREQUENCY WITH WHICH TEACHERS OF VARIOUS DEPARTMENTS GIVE TEACHER-MADE TESTS DURING ONE SEMESTER

Department	Median number of tests given	Percent of Teachers Giving:			Number of teachers
		0–7 tests	8–15 tests	16 or more tests	
1	2	3	4	5	6
English	7.0	59	27	14	324
Social studies	8.3	49	34	17	234
Mathematics	10.5	34	43	23	226
Science	9.7	38	40	22	181
Foreign language	6.9	59	27	14	92
Latin	8.0	50	30	20	54
Commercial studies	9.6	45	30	25	125
Industrial arts	4.6	77	15	8	103
Home economics	6.0	68	20	12	76
Fine arts	3.4	94	4	2	46
Physical education	4.0	78	11	11	28
Total group	**7.6**	**53**	**30**	**17**	**1,489**

According to the above table, one-fourth of the commercial teachers give 16 or more tests during the semester; more

than half of all the teachers (53 percent) give fewer than 8 tests; 30 percent give from 8 to 15 tests and 17 percent give 16 or more tests. This is a large number of tests for teachers to make out unless they have some system of keeping tests used in previous classes. It shows the necessity for developing some scheme for preserving tests or test items from semester to semester.

Quizzes.—Short quizzes seem to be a testing device most used by teachers of Latin, modern foreign language, and mathematics, according to the data in table 2. The number of quizzes given in these departments far exceeds the number given in any other department. The English, social studies, commercial, and science departments give approximately the same number, amounting to approximately 13 tests during a semester.

In emphasizing the difference between departments the fact that teachers' practices vary a great deal within any department should not be disregarded. In Latin, though the median number of quizzes given is 28.5, 20 percent of the teachers are located in the group giving from 0 to 15 quizzes. In industrial arts, while the median is only 6.5, 10 percent of the teachers give 40 or more quizzes. A comparison of the achievement of classes using a large number of tests and quizzes with those using only a few would be a most interesting study.

TABLE 2.—FREQUENCY WITH WHICH TEACHERS OF VARIOUS DEPARTMENTS GIVE SHORT QUIZZES DURING ONE SEMESTER

Department	Median number of quizzes given	Percent of teachers giving—			Number of teachers
		0–15 quizzes	16–39 quizzes	40 or more quizzes	
1	2	3	4	5	6
English	13.0	54	34	12	309
Social studies	13.3	58	34	8	225
Mathematics	18.2	41	39	20	204
Science	11.4	69	28	3	172
Foreign language	19.6	31	50	19	90
Latin	28.5	20	51	29	49
Commercial studies	13.4	57	32	11	109
Industrial arts	6.5	77	13	10	98
Home economics	7.1	76	23	1	74
Fine arts	4.2	87	13	0	39
Physical education	.9	90	5	5	20
Total group	12.6	56	33	11	1,389

A study of the totals shows that the median number of quizzes is 12.6; 56 percent of the teachers give from 0 to 15 quizzes; 33 percent give from 16 to 39, and 11 percent give 40 or more quizzes. On the basis of personal judgment, it would appear that a number of teachers make too little use of tests and quizzes in their classes and also that a smaller number of teachers use them too often.

Standardized achievement tests.—A median was not calculated for the departments in the case of standardized tests. The median if calculated would lie in either the zero or one interval. Instead, the percentage of the teachers who gave no standardized tests, one or two and three or more were calculated. These data, as presented in table 3, show that 60 percent of the teachers gave no standardized achievement tests during the first semester, 20 percent gave one or two such tests, and 15 percent gave three or more. Undoubtedly the number of teachers who gave standardized tests would have been increased if the study had been made for the second semester of the year rather than for the first, as more tests are given in June than in February. Another factor influencing the data is that the replies were made for 1931–32, a school year in which budgets were seriously reduced.

TABLE 3.—FREQUENCY WITH WHICH TEACHERS OF VARIOUS DEPARTMENTS GIVE STANDARDIZED ACHIEVEMENT TESTS DURING ONE SEMESTER

Department	Percent of teachers giving—			Number of teachers
	No tests	1 or 2 tests	3 or more tests	
1	2	3	4	5
English	46	36	18	284
Social studies	71	21	8	201
Mathematics	50	37	13	192
Science	64	22	14	164
Foreign language	59	27	14	79
Latin	61	20	19	36
Commercial studies	44	10	46	102
Industrial arts	78	16	6	82
Home economics	83	10	7	58
Fine arts	88	12	0	26
Physical education	83	11	6	18
Total group	60	25	15	1,242

In the commercial department either the teachers do not give any standardized tests, 44 percent following this practice, or they give a number of them, 46 percent giving three or more. As has been previously stated, one of the reasons for the large use of standardized tests by the commercial departments is the policy of some companies to furnish the users of their books free testing material. Standardized tests, as well as teacher-made tests and quizzes, are used least by the industrial arts, home economics, fine arts, and physical education departments. The English department, though not ranking high in the other forms of measurement, ranks second in the percentage of teachers who use standardized achievement tests. Fifty-four percent of the English teachers gave one or more standardized tests. This is not especially surprising considering that there are more than a hundred tests published for the use of English teachers.

CHAPTER III: WHAT TYPES OF QUESTIONS DO TEACHERS USE IN THE TESTS THEY CONSTRUCT THEMSELVES?

Types of tests used.—The objective type test has been advocated since 1920. Are most teachers, in the tests which they construct themselves, using the objective test or are they still using the essay test? The answer to the question is found in table 4. About 74 percent of the teachers are making use principally of the objective test; only 16 percent are still making extensive use of the essay test. Ten percent of the teachers are making equal use of essay and objective examinations. The emphasis has decidedly swung to the use of the newer type of test. These facts suggest that for teachers in service the emphasis should not be on whether to use the objective examination or the essay but rather on how they can improve the objective tests which they use.

TABLE 4.—PERCENTAGES OF TEACHERS OF THE VARIOUS DEPARTMENTS USING PRINCIPALLY THE ESSAY EXAMINATION, THE OBJECTIVE EXAMINATION, OR A COMBINATION OF THE TWO

Department	Percent of teachers making use principally of—			Number of teachers
	Essay examination	Objective examination	Combination of essay and objective examination	
1	2	3	4	5
English	13	73	14	334
Social sciences	12	77	11	242
Mathematics	21	69	10	202
Science	19	73	8	173
Foreign language	16	74	10	90
Latin	22	66	12	50
Commercial studies	15	77	8	106
Industrial arts	20	79	1	88
Home economics	13	79	8	75
Fine arts	9	85	6	34
Physical education	22	78	0	18
Total group	**16**	**74**	**10**	**1,412**

There seems to be comparatively little difference (13 percent) between the department making the most use of essay tests and the one making least use of them. It is interesting to note that the departments which give the fewest number of tests, as shown in the previous section, relatively make the most use of the objective type.

Types of questions used.—The teachers were asked to check the types of questions which they used in their examinations. The number checking each type was changed into a percentage of the teachers of each department who replied to the question. The results are given in table 5. In the English department, 59 percent of the teachers use essay questions in their tests; 70 percent, true-false statements; 73 percent, completion items; 52 percent, the matching technique; 55 percent, multiple-choice questions; 79 percent, one-word answer questions; 32 percent make use of problems in some manner; and 6 percent use other types of questions. By studying the rows in the table the type of question which is most popular in each department can be noted. When the columns are studied the department making most frequent use of each type of question can be noted.

TABLE 5.—PERCENTAGES OF TEACHERS IN EACH DEPARTMENT WHO USE VARIOUS KINDS OF QUESTIONS IN THE TESTS THEY CONSTRUCT THEMSELVES

Department	Types of Questions								Number of teachers
	Essay	True-false	Completion	Matching	Multiple-choice	1-word	Problems	Others	
1	2	3	4	5	6	7	8	9	10
English	59	70	73	52	55	79	32	6	233
Social studies	61	71	81	61	66	70	39	7	175
Mathematics	22	50	50	39	37	29	94	3	157
Science	53	58	73	48	57	65	50	10	145
Foreign language	50	27	88	31	41	53	20	31	64
Latin	50	36	68	34	34	75	30	45	44
Commercial studies	38	55	51	23	29	38	40	25	84
Industrial arts	26	56	43	25	29	31	53	7	77
Home economics	61	93	88	34	66	61	34	0	59
Fine arts	29	48	53	19	23	68	39	13	31
Physical education	44	56	31	0	13	62	13	13	16
Total group	47	60	68	42	48	59	46	11	1,085

The English, Latin, fine arts, and physical education departments make most use of the one-word answer question; the mathematics department makes most frequent use of problems in their tests; and the social studies, science, and modern foreign-language departments make most use of the completion question. The industrial arts, home economics, and commercial departments use the true-false question to the greatest extent. The essay, matching, and multiple-choice types of questions are not prime favorites with any department. It should be noted that the table furnishes information as to the percentage of teachers who make use of each type of question. It does not tell to what extent the teachers use each type.

The essay question is most popular with the teachers of social studies and home economics; it is least popular with the mathematics and industrial arts instructors. It is rather difficult to explain the difference between the home-economics and industrial-arts teachers; 61 percent of the former use essay questions, while only 26 percent of the latter use them.

The true-false question is used by only three-fifths of the teachers reporting. The true-false question is used by practically all the teachers of home economics (93 percent) and by 7 in 10 of the teachers of English and the social studies. Fewer modern foreign language and Latin teachers use the true-false test than do other teachers. It is undoubtedly a form of question which does not lend itself to the testing of language teaching as do other forms.

The completion question is used by 68 percent of the teachers. More teachers use this form than any other one type. While more teachers use this type, very little research has been carried on in connection with it. The type of question most frequently studied has been the true-false. It would seem that completion questions can be made out in as poor a fashion as can true-false tests. There is a need for a careful study of the completion question, especially of the kind which teachers use in their tests. The fact that completion, true-false, and one-word answer questions are the ones which are used by most of the teachers indicates

that the easiest questions to construct are the most popular. There is a danger that the easiest question to construct may be very poorly worked out. Until there is a comprehensive study of the actual tests which the teachers use, the skill with which teachers construct different types of questions cannot be determined.

Another manner in which table 5 can be considered is to study the questions which are used by more than 50 percent of the teachers in each department. These data show that teachers of English, social studies, science, and home economics make use of a wide variety of questions. The teachers in the other departments seem to favor certain types. In some cases there is a reason for such favoritism, but in others there appears to be no apparent basis for the choice.

Number of types used.—Table 6 has been prepared in an attempt to determine the number of types of questions which teachers use. This table tells what percent of the teachers use essay questions only; essay with one, two, or three types of objective questions; essay with four or more types of objective questions; one type of objective question only; two or three types of objective questions; and four or more types of objective questions. Such an analysis furnishes a rather complete picture of the adequacy of testing done when considered in relation to variety of the tests. On this basis only about half of the teachers have any great variety in the type of question which they use. The teachers who use four or more types of questions have some variety. Where no more than three types are used it would appear that the variety is very meager.

Only 2 percent of the teachers make sole use of the essay type of question. The other 98 percent all use objective questions in some form. This is one of the most surprising findings in the study. These results may be affected by the possibility of selectiveness of the sampling. Before the data were tabulated the writers felt that a fairly large percentage of the teachers used the essay type question to the exclusion of the other types.

TABLE 6.—PERCENTAGES OF TEACHERS IN EACH DEPARTMENT WHO USE VARIOUS COMBINATIONS OF QUESTIONS IN THE TESTS THEY CONSTRUCT THEMSELVES [1]

Department	Essay only	Essay with 1, 2, or 3 types of objective	Essay with 4 or more types of objective	1 type of objective only	2 or 3 types of objective	4 or more types of objective
1	2	3	4	5	6	7
English	1	31	28	2	9	29
Social studies	2	21	38	2	6	31
Mathematics	0	14	8	22	26	30
Science	2	24	27	4	17	26
Foreign language	0	38	14	6	23	19
Latin	0	34	14	9	27	16
Commercial studies	2	25	11	23	27	12
Industrial arts	4	17	6	20	35	18
Home economics	2	30	29	0	20	19
Fine arts	3	23	3	13	35	23
Physical education	6	38	0	25	31	0
Total group	**2**	**25**	**21**	**9**	**19**	**24**

[1] The number of teachers is the same as in table 5.

A condition which is in need of correction is that 9 percent of the teachers make use of only one type of objective question. It happens that this 9 percent is accounted for largely by the fact that 5 percent of all the teachers give only problem-type questions. Slightly more than 1 percent of the teachers give one-word-answer questions exclusively. The percent of teachers making sole use of true-false questions is so small as to be negligible, about three-tenths of 1 percent. These figures are not given in the table but are taken from the original tabulations. It is rather difficult to explain why 20 percent of the industrial arts, 23 percent of the commercial, and 25 percent of the physical-education teachers use only one type of objective question. One explanation which occurs is that the teachers in these fields might be trained less in testing techniques than are some of the others.

The figures in the table are of special interest to the teachers in each department. Persons interested in the work of one department can make valuable comparisons for that department, which would prove too space-consuming if made here.

Number of items used.—Another method of evaluating teacher-made tests is to study the number of items which

are used. Research has shown that the use of only a few questions means that the test is so unreliable as to be practically worthless. It is commonly accepted by writers on measurement that an objective test should have a hundred items to have sufficient reliability to be valuable as a measuring instrument.

TABLE 7.—A STUDY OF THE NUMBER OF QUESTIONS TEACHERS OF VARIOUS DEPARTMENTS USUALLY INCLUDE IN THE ESSAY AND OBJECTIVE TESTS THEY CONSTRUCT FOR THEMSELVES

Department	Essay Tests					Objective Tests				
	Median number of questions	Percent of Teachers Including—			Number of teachers	Median number of questions	Percent of Teachers Including—			Number of teachers
		0–5 items	6–11 items	12 or more items			0–20 items	21–60 items	61 or more items	
1	2	3	4	5	6	7	8	9	10	11
English	4.7	55	40	5	169	32.1	41	37	22	260
Social studies	4.4	66	32	2	117	34.6	29	53	18	207
Mathematics	7.9	30	61	9	64	14.8	68	25	7	146
Science	7.6	43	48	9	77	33.6	32	53	15	150
Foreign language	4.9	52	32	16	25	16.0	56	33	11	45
Latin	4.7	62	38	0	16	18.5	56	22	22	27
Commercial studies	9.0	19	64	17	36	27.3	43	33	24	72
Industrial arts	9.9	27	43	30	30	29.0	43	39	18	62
Home economics	8.9	14	69	17	35	35.5	28	49	23	57
Fine arts	4.3	62	38	0	8	19.3	52	24	24	91
Physical education	10.0	33	22	45	9	20.2	53	47	0	15
Total group	**6.0**	**47**	**44**	**9**	**586**	**31.2**	**42**	**41**	**17**	**1,062**

The number of items which teachers say that they usually include in their self-made essay and objective tests are tabulated in table 7. The median number of questions has been calculated by departments for each type and for the total. In addition, the percentages of teachers who include in their tests various numbers of items have been computed. Three groupings have been made: The first, 0 to 5 items for the essay tests and 0 to 20 items for the objective tests, is considered to be an entirely inadequate number of items for a test to contain. Using this arbitrary basis for judgment, 47 percent of the teachers have too few questions in their essay tests and 42 percent have too

few questions in their objective tests, Clearly more than two-fifths of the teachers do not have enough questions in their tests to make them useful. The second grouping, 6 to 11 essay questions and 21 to 60 objective items, is considered to be only fairly satisfactory from the standpoint of the number of items. This means that 44 percent of the teachers are barely meeting the minimum standards for the number of questions included in essay tests and only 41 percent meeting the minimum for objective tests. The third grouping, 12 or more essay questions and 61 or more objective questions, is considered to constitute a sufficient number of items to be satisfactory. It seems unusual that only 9 percent of the teachers are making their essay tests, and only 17 percent are making their objective tests *long enough*.

A study of the medians reveals the same condition. The median number of objective questions included is 31.2. By comparing such a test of 31 items with the ideal test of 100 items it becomes evident that teachers are not making their tests nearly long enough. The indictment of too few items can be brought against all departments alike. While some departments are better than others, all are so far from a desirable standard that it is not worth while to mention these few.

A careful study of the tests which the teachers give would have to be made before final conclusions could be drawn. It appears from the replies which teachers have made to the questionnaire that many teachers include too few *types of questions* in their tests and that most teachers do not have anywhere enough *items* in their tests.

CHAPTER IV: WHAT ARE THE PRACTICES OF TEACHERS RELATIVE TO FINAL EXAMINATIONS?

TO GIVE or not to give? That seems to be the question which is asked in connection with final examinations. Twenty-four percent of the teachers answer it by saying that they do not give one. (See table 8.) Seventy-six percent do give a final examination, though the difference in type is noticeable. There are marked differences between the practices of the various departments. If a pupil is taking Latin he can be almost sure that he will be given a final examination, for such is the practice of 93 percent of the Latin teachers. Whereas in home economics, fine arts, or physical education the pupil would have a fair chance at missing a final examination, for 33, 34, and 42 percent, respectively, do not give final examinations. The final examination is more popular in the foreign-language departments, including Latin, than in the other departments.

TABLE 8.—PERCENTAGES OF TEACHERS IN EACH DEPARTMENT USING VARIOUS TYPES OF TESTS AS FINAL EXAMINATIONS

Department	Percent of Teachers Using as a Final Examination a—					No final examination given	Number of teachers
	Standardized achievement test [1]	Self-made essay test	Self-made objective test	Essay and objective test	Test made out by department [2]		
1	2	3	4	5	6	7	8
English	7	8	22	21	15	27	354
Social science	3	8	29	18	15	27	252
Mathematics	16	5	33	3	24	19	239
Science	17	10	28	8	16	21	196
Foreign language	20	15	26	17	12	10	96
Latin	17	15	41	15	5	7	54
Commercial studies	18	8	32	7	15	20	122
Industrial arts	1	12	40	4	15	28	107
Home economics	1	9	32	18	7	33	79
Fine arts	0	8	43	0	15	34	47
Physical education	0	3	28	3	24	42	29
Total group	10	9	29	12	16	24	1,575

[1] Standardized achievement test includes Regents' examinations, which were very few.
[2] Test made out by the department refers to a test which is used by all the teachers in the department who teach the same subjects.

The largest percentage of teachers give objective tests of their own construction as finals. This practice is marked, for 29 percent of the teachers make out their own objective tests and use them for final examinations. An encouraging fact is that 16 percent of the teachers use a test which has been made out by the department and is used in all similar classes of the department. Probably all of such tests are of the objective type, for it is very difficult to score a department test which is not. It seems to the writers that an excellent method of improving instruction in a department is to develop cooperative tests to be used by all the teachers of identical subjects. It is encouraging to note that one teacher in six is already using department tests as final examinations.

The popularity of the essay-type test as a final examination is much less than was expected. Approximately 1 teacher in 10 (9 percent) makes use of an essay test as a final examination. The use of both essay and objective questions in the final examination is more frequent than the use of only the essay questions. This plan of using the two types of questions in combination is favored more by the English department than by any other department. According to most of the writers on measurement, it is a practice to be recommended. The surprising thing in the English department is that only 8 percent of its teachers make exclusive use of the essay question in the final examination. There is fair agreement within departments as to the percentage of teachers making use of the various forms of teacher-made tests.

There are significant differences between the departments when their use of the standardized achievement test is concerned. The foreign language, commercial, Latin, science, and mathematics are the only departments which make much use of the standardized test as a final examination. This fact seems to be a significant indication of the fields in which the standardized achievement tests have been developed to the point of greatest use for the teacher. Some of the reasons that these departments are outstanding are apparent. The content of the courses in foreign language, Latin, science, and mathematics is relatively constant and uniform. Where such is the case it is possible

to construct standardized tests which are suitable for most of the courses as offered. The reason for the popularity of the standardized test in the commercial department is not so apparent. It is probable that the policy of the publishers of commercial materials operates to produce this condition.

Since the field of English has more than a hundred standardized tests available and only 7 percent of the teachers use any of them as final examinations, one of three conditions should be true: (*a*) The English teachers are not aware of the tests which are available to them; (*b*) the tests in English are not especially suitable for use as final examinations; or (*c*) the English departments prefer to spend their money in some other way.

The small number of social science teachers making use of standardized achievement tests as final examinations seems to indicate rather definitely the unsuitability of tests in this field. If the tests covered the material that the social studies teachers felt should be tested, more teachers would use them. It is hoped that the work now being done on social studies tests will result in a number of improved tests in this field. Needless to say, such tests cannot be limited to testing only factual material if they are to be widely acceptable.

Length of final examinations.—Half of the teachers give final examinations which take an hour and a half or longer, while half give examinations taking less than the 90 minutes. There is comparatively little difference between the median length of the examinations in the various departments, as table 9 shows. There are, however, wide differences in the practices of the different departments relative to giving long examinations of 2 hours or more. If objective questions are used, a large amount of material can be sampled in an hour and a half. Ninety minutes amounts to about two periods in most high schools. It would seem that if the final test were well prepared, a satisfactory measure of achievement could be obtained, especially if testing had been done regularly throughout the course.

TABLE 9.—PERCENTAGES OF TEACHERS USING FINAL EXAMINATIONS OF VARIOUS LENGTHS

Department	Median length in minutes	Percent of Teachers Whose Final Examinations Take—							Number of teachers
		30–44 minutes	45–59 minutes	60–74 minutes	75–89 minutes	90–104 minutes	105–109 minutes	2 hours or more	
1	2	3	4	5	6	7	8	9	10
English	92	7	16	19	5	20	4	29	263
Social science	79	9	18	21	7	22	1	22	188
Mathematics	88	5	16	21	9	16	6	27	197
Science	94	5	12	22	5	22	3	31	150
Foreign language	99	1	12	15	10	20	3	39	87
Latin	79	12	14	18	22	4	28	2	50
Commercial	90	5	16	21	8	22	3	25	99
Industrial arts	74	9	16	27	0	23	4	21	75
Home economics	85	12	13	21	6	21	8	19	52
Fine arts	85	6	19	19	9	6	3	38	32
Physical education	66	13	7	73	0	7	0	0	15
Total group	**90**	**7**	**15**	**21**	**7**	**19**	**5**	**26**	**1,208**

CHAPTER V: WHO CORRECTS THE TESTS?

TEACHERS use a variety of plans for correcting the test papers. The number of different combinations of plans followed would be too long for consideration, so the percentage of the teachers following each method has been calculated. Since most teachers use several of the methods, obviously the percents would not total a hundred. The various plans for correcting self-made standardized tests, with the percentage of teachers who follow each plan, are given in table 10. The most popular plan, or at least the plan which the greatest percentage of teachers follow, is for the teacher to correct her own papers. This plan is followed by practically all teachers. The next most popular plan is to have the pupils exchange papers before correcting them. Nearly two-fifths of the teachers use this plan in getting teacher-made tests corrected, and one-fifth use it in getting standardized tests corrected. The plan of allowing each pupil to correct his own paper is not especially popular, as the 11 and 5 percents show. The services of clerks for correcting work is apparently seldom practiced. Neither do many of the teachers have one pupil in the class correct all the papers. It appears that either the teacher corrects the papers or the papers are corrected in class.

TABLE 10.—PERCENTAGE OF TEACHERS USING VARIOUS METHODS OF HAVING TEACHER-MADE AND STANDARDIZED TESTS SCORED

Plan	Percent of Teachers Following Each Plan in Connection With—	
	Self-made tests	Standardized tests
Teacher corrects	92	85
Pupils exchange papers and correct	37	20
Each pupil corrects his own paper	11	5
A clerk corrects	2	4
One pupil corrects all the papers	3	2
Other plan	1	1
Number of teachers	1,662	797

TABLE 11.—PERCENTAGE OF 1,614 TEACHERS USING VARIOUS METHODS OF PRESENTING THEIR OWN CONSTRUCTED TESTS TO PUPILS

Plan	Percent of teachers following each plan
Mimeographed or duplicated with a copy for each pupil	56
Written on the blackboard	41
Read to the class	30
Printed	3

Method of presenting teacher-made tests to the pupils.—The teachers present their own constructed tests to the pupils in a number of different ways. The method followed by the largest percentage of teachers is to mimeograph or duplicate the test so that each pupil has a copy. Fifty-six percent of the teachers use this plan at least part of the time as shown by the data given in table 11. Forty-one percent of the teachers write their tests on the blackboard some of the time. The oral method or reading the questions to the class is used at times by 30 percent of the teachers. The data were not separated according to departments in the original tabulation, as it was felt that the policy of the school probably had more influence on the method of presenting tests than did the department in which the teacher taught. The question of mimeographing tests needs to be settled by the administration in each school. Facilities should be provided for the duplicating of tests in some manner, for they are important instructional material. Another argument for department tests in large schools is that the duplicating of test material is considerably facilitated by the use of the same test in all classes which are alike.

CHAPTER VI. WHAT USES DO TEACHERS MAKE OF TESTS?

TEACHERS were asked to indicate on the check-list the uses which they made of aptitude or prognostic tests, character tests, rating scales, intelligence tests, standardized achievement tests, teacher-made objective tests, and teacher-made essay tests. A list of 19 uses was presented for each type of test. These data were analyzed by departments. The number of teachers in each department who indicated that they used a certain type of measurement for one of the uses, was changed to a percent. It would have been space-consuming and rather meaningless to have reproduced all of these percents. Many of them were very small. Only those uses of any test were included which were checked by at least 10 percent of the teachers in any *one* department. Where the percentage of use was given for any department it was also given for all departments for purposes of comparison. This arbitrary standard excluded aptitude tests, character tests, and rating scales, for in no case did 10 percent of the teachers in a department use one of these measurements for any purpose.

The data which were included are presented in table 12. The uses for each type of test are grouped together. Comparisons of practice among the departments is possible by glancing across the rows. The departments have been arranged in the same order as they appear in the other tables in this bulletin. It is apparent that teachers make most use of their own objective tests and least use of intelligence tests. It will be noted also that the percentage of use is highest with the teacher-made objective tests. Whether this arises because teachers who construct tests have been more strongly motivated or because teachers give more of their own objective tests, one cannot say. Since the percentages in general are fairly low, one can say that many possibilities of the uses for tests in instruction and guidance have been overlooked.

TABLE 12.—PERCENTAGES OF THE TEACHERS IN EACH DEPARTMENT USING INTELLIGENCE, STANDARDIZED ACHIEVEMENT, TEACHER-MADE ESSAY, AND TEACHER-MADE OBJECTIVE TESTS FOR VARIOUS PURPOSES

INTELLIGENCE TESTS

Use	Departments											Total
	English	Social studies	Mathematics	Science	Foreign language	Latin	Commercial studies	Industrial arts	Home economics	Fine arts	Physical education	
1	2	3	4	5	6	7	8	9	10	11	12	13
1. To enable the teacher to tell whether poor work is due to lack of ability or to other factors which can be corrected	14	15	23	12	10	17	2	7	3	2	0	13
2. To aid in discovering which pupils are capable of doing exceptional work	12	14	16	9	6	16	4	5	3	4	0	10
3. To furnish an estimate of the pupil's probable success in college	8	9	12	11	7	7	6	6	1	0	0	8
4. To aid in studying and advising failing pupils	10	9	9	10	9	7	7	6	1	0	0	8
5. To furnish information concerning the probable success a pupil will have in a certain curriculum	8	8	9	8	6	11	3	1	0	0	0	6
STANDARDIZED ACHIEVEMENT TESTS												
1. To compare the results attained by my class with the norms	24	17	35	19	20	24	15	5	4	4	3	20
2. To compare the results attained in 2 or more of my classes	17	11	22	14	15	21	20	1	1	0	0	14
3. To aid in determining the pupil's mark	13	7	21	17	17	18	23	1	5	0	3	13
4. To show pupils in what part of the subject they are weak	18	5	20	14	15	18	16	2	1	0	0	12
5. To stimulate pupils to do better work	15	7	16	14	14	19	21	0	1	2	0	12
6. To aid in determining which pupils will fail	10	6	16	14	9	17	16	2	1	0	3	10
7. To discover what parts of a topic need to be retaught	11	4	17	10	8	18	20	1	5	0	0	10
8. To discover what parts of a topic or unit need to be taught	21	6	9	7	8	11	9	1	4	0	0	10
9. To aid in discovering which pupils are capable of doing exceptional work	12	6	11	9	11	14	12	1	3	2	6	9

TABLE 12.—PERCENTAGES OF THE TEACHERS IN EACH DEPARTMENT USING INTELLIGENCE, STANDARDIZED ACHIEVEMENT, TEACHER-MADE ESSAY, AND TEACHER-MADE OBJECTIVE TESTS FOR VARIOUS PURPOSES—Con.

STANDARDIZED ACHIEVEMENT TESTS—Continued

Use	Departments											Total
	English	Social studies	Mathematics	Science	Foreign language	Latin	Commercial studies	Industrial arts	Home economics	Fine arts	Physical education	
1	2	3	4	5	6	7	8	9	10	11	12	13
10. To enable the teacher to tell whether poor work is due to lack of ability or other factors which can be corrected	13	5	13	7	14	9	10	2	0	2	3	9
11. To aid in studying and advising failing pupils	11	7	13	8	10	11	5	1	0	0	0	8
12. To satisfy parents that their children have been marked fairly	8	5	12	8	11	11	10	5	1	0	3	8
13. To furnish an estimate of the pupil's probable success in college	4	3	5	12	6	7	2	1	1	0	0	4
TEACHER-MADE OBJECTIVE TESTS												
1. To aid in determining the pupil's mark	62	53	58	65	41	65	51	45	47	30	23	55
2. To discover what parts of a topic need to be re-taught	59	49	51	60	46	65	53	46	44	32	20	53
3. To show pupils in what part of the subject they are weak	54	46	45	53	45	61	43	38	39	32	20	47
4. To stimulate pupils to do better work	48	44	42	51	33	47	40	39	35	30	29	44
5. To discover what parts of a topic or unit need to be taught	49	26	38	29	24	40	35	41	29	32	23	36
6. To aid in determining which pupils will fail	40	33	39	38	20	42	29	27	27	16	6	34
7. To compare the results attained in 2 or more of my classes	33	35	29	36	24	25	30	33	19	14	16	31
8. To enable the teacher to tell whether poor work is due to lack of ability or other factors which can be corrected	26	32	30	27	25	30	27	27	26	34	16	28
9. To aid in discovering which pupils are capable of doing exceptional work	17	19	18	19	19	21	17	17	9	12	3	17
10. To aid in studying and advising failing pupils	21	15	14	20	15	14	9	7	10	8	3	15
11. To satisfy parents that their children have been marked fairly	14	14	18	16	18	26	13	8	14	10	6	15

TABLE 12.—PERCENTAGES OF THE TEACHERS IN EACH DEPARTMENT USING INTELLIGENCE, STANDARDIZED ACHIEVEMENT, TEACHER-MADE ESSAY, AND TEACHER-MADE OBJECTIVE TESTS FOR VARIOUS PURPOSES—Con.

TEACHER-MADE OBJECTIVE TESTS—Continued

Use	Departments											Total
	English	Social studies	Mathematics	Science	Foreign language	Latin	Commercial studies	Industrial arts	Home economics	Fine arts	Physical education	
1	2	3	4	5	6	7	8	9	10	11	12	13
12. To form ability groups within the room	10	11	9	10	6	7	4	10	8	6	0	9
13. To furnish an estimate of the pupil's probable success in college	4	5	5	13	4	14	4	3	1	4	0	5
TEACHER-MADE ESSAY TESTS												
1. To aid in determining the pupil's mark	12	35	24	32	29	37	18	14	31	8	13	30
2. To discover what parts of a topic need to be re-taught	22	22	19	26	19	28	21	15	22	14	16	21
3. To show pupils in what part of the subject they are weak	24	22	20	22	23	19	15	13	20	10	13	20
4. To stimulate pupils to do better work	26	23	18	23	23	21	12	15	14	12	6	20
5. To aid in determining which pupils will fail	26	19	20	18	16	18	12	8	16	6	10	18
6. To enable teacher to tell whether poor work is due to lack of ability or to other factors which can be corrected	15	21	11	12	16	12	9	10	18	12	6	14
7. To discover what parts of a topic or unit need to be taught	18	8	14	8	11	14	15	7	14	8	15	12
8. To aid in discovering which pupils are capable of doing exceptional work	15	18	10	7	16	11	10	4	8	8	6	12
9. To compare the results attained in two or more classes	12	12	10	9	7	7	6	4	6	4	3	9
10. To aid in studying and advising failing pupils	10	9	7	9	8	7	7	2	5	0	0	8
Number of teachers in each department on which the percents are based	354	260	244	196	96	57	136	109	80	51	31	1,614

CHAPTER VII: WHAT ARE THE ATTITUDES OF TEACHERS TOWARD THE GIVING OF TESTS?

THE PREVIOUS chapters in this bulletin have all dealt with the actual practices of the teachers in various phases of the testing program. It may be profitable, not only to study the actual practices of the teachers, but to study their attitudes toward certain problems in the testing field. Their reactions should prove a valuable guide in improving testing programs in the secondary school and might also prove helpful in constructing tests. The reason for asking for the attitudes of teachers in regard to testing is to determine the desires of teachers apart from their actual practices which have been reported in the previous chapters. Limitations are present when practices are concerned. The report in this and the following chapters on the attitudes of teachers is therefore a check upon the actual practices reported.

The topics treated in this chapter deal with teachers' reactions to tests, especially standardized tests, and to the frequency with which self-made and standardized tests should be given.

The directions on this section of the check list were:

> Place a check by all of the following statements with which you agree. If you are opposed to any of the statements place a NO by the statement.

This form of reply made it difficult to determine whether the omission of a check mark or a NO was an indication that the teacher did not feel either especially for or against the statement, or merely neglected to answer the question. Because it was difficult to determine what omissions meant, all percentages were figured on the total number of teachers who returned the check lists in each department. This number of teachers is given in the last column of table 13 and is used as a base for all the percentages in tables 13 to 19. These include all the tables in this section and the next. All the percentages should be interpreted as percents of the total number of teachers replying to any question on the check list. In most of the other tables in the chapter the

percentages have been figured on the basis of the teachers replying to the question under consideration.

Teachers favor giving tests.—There is no doubt that teachers favor giving and using tests in their courses. The sentiment on this point as expressed in table 13 is clear with 92 percent agreeing as compared to 1 percent opposed. There is very little difference in the opinions of the various departments with the exception of fine arts and physical education. These departments show a slightly higher percentage of teachers opposed, with a larger percentage of teachers in these departments not answering. While there is agreement that tests should be used, there are many disagreements on the details of using them.

TABLE 13.—ATTITUDES OF TEACHERS TOWARD GIVING AND USING TESTS AND TOWARD STANDARDIZED ACHIEVEMENT TESTS IN RELATION TO THEIR OWN CONSTRUCTED TESTS

Department	Percent of Teachers						Number of teachers
	In Favor of Giving and Using Tests in my Courses			Preferring Standardized Achievement Tests to Self-Made Tests			
	Agreeing	No answer	Opposed	Agreeing	No answer	Opposed	
1	2	3	4	5	6	7	8
English	92	7	1	21	47	32	354
Social sciences	93	6	1	15	56	29	260
Mathematics	90	9.6	.4	26	47	27	244
Science	92	7.5	.5	15	46	39	196
Foreign language	98	2	0	20	44	36	96
Latin	95	5	0	20	53	27	57
Commercial studies	96	3	1	32	56	12	136
Industrial arts	90	8	2	13	47	40	109
Home economics	90	9	1	12	65	23	80
Fine arts	75	21	4	12	64	24	51
Physical education	71	26	3	23	51	26	31
Total group	**92**	**7**	**1**	**20**	**50**	**30**	**1,614**

Standardized tests compared to teacher-made tests.—One of the sources of disagreement is whether teachers prefer standardized tests to their own constructed tests. The data in the second section of table 13 show that 20 percent of the teachers prefer standardized tests, while 30 percent prefer

their own. Half of the teachers did not answer this question. The evidence seems to indicate that teachers prefer their own tests in the ratio of 3 to 2.

The attitude of the teachers in the various departments is practically what would be expected from the other data which have been analyzed. Commercial teachers constitute the only group which has a larger percentage of teachers favoring standardized tests than favoring their own, the percents being 32 to 12. The mathematics department is practically evenly divided, 26 percent favoring standardized tests compared to 27 percent favoring their own. The other departments favored their self-made tests rather than standardized tests.

TABLE 14.—ATTITUDE OF TEACHERS TOWARD THE FREQUENCY WITH WHICH TEACHER-MADE TESTS SHOULD BE GIVEN

Department	Percent of Teachers Advocating Various Frequencies [1]					
	Every day	Every week	Every 2 weeks	Once a month	Once a semester	At the completion of a topic or unit
1	2	3	4	5	6	7
English	4	20	10	8	9	78
Social studies	2	21	10	4	10	83
Mathematics	7	25	18	5	7	74
Science	3	29	17	5	11	72
Foreign	8	29	6	19	11	77
Latin	16	18	9	14	12	60
Commercial studies	0	24	13	7	9	68
Industrial arts	1	17	17	22	10	50
Home economics	1	15	11	15	5	78
Fine arts	0	4	8	22	18	37
Physical education	0	6	10	3	16	55
Total group	4	22	13	9	10	66

[1] The percentages will not total a hundred in each row, for some teachers checked one of the time classifications and also the topic or unit classification. Where 2 or more time classifications were checked the most frequent testing was counted, so there is no overlapping in the first 5 classifications.

Frequency of giving teacher-made tests.—How often should tests be given? Preferences range from as frequently as every day to not giving them at all. Table 14 is an analysis of how often teachers prefer to give tests. Four percent of

the teachers think that tests should be given as often as every day. The Latin, foreign language, and mathematics departments are practically the only departments who believe that this plan should be followed. Comparatively few teachers even in these departments advocate the daily test, for the percent for the Latin department is only 16 and for the other two it is 8 and 7, respectively. Testing every week is in more popular favor. Twenty-two percent of the teachers advocate testing as frequently as this. Twenty percent or more of the English, social science, foreign language, science, mathematics, and commercial departments approve this plan. Testing every 2 weeks is advocated by 13 percent of the teachers. Once a month is preferred by 9 percent and once a semester by 10 percent.

Most teachers seem to feel that it is important to test at the completion of a topic or unit. The replies to this item represented 66 percent of the teachers. This would seem to indicate that testing at the completion of a topic is considered more important than testing at any particular time during the semester.

Frequency of giving standardized tests.—There are marked differences as to the time when teachers prefer to give standardized tests as compared to the self-made tests. Thirty-five percent of the teachers indicated that they preferred to give standardized tests at the end of the semester, as shown in table 15. Undoubtedly this is partly due to the fact that most of such tests are suitable for use only at the end of the semester. Nearly as large a percentage of teachers would like to give tests at the completion of a topic or unit. This would seem to indicate that there is a possibility for the development of what is now termed the instructional test. Such instructional tests would contain tests covering each unit of the subject. There are many such tests now commercially available. One practical difficulty in the development of these tests to their optimum usefulness is the fact that subject matter in the courses is not and probably will not be standardized to the extent that such tests can be developed for use in all courses.

TABLE 15.—ATTITUDE OF TEACHERS TOWARD THE FREQUENCY WITH WHICH STANDARDIZED TESTS SHOULD BE GIVEN

Department	PERCENT OF TEACHERS ADVOCATING VARIOUS FREQUENCIES [1]					
	Every day	Every week	Every 2 weeks	Once a month	Once a semester	At the completion of a topic or unit
1	2	3	4	5	6	7
English	0	1	1	5	35	34
Social studies	0	2	1	5	38	20
Mathematics	0	3	2	8	42	38
Science	.5	1	1	6	37	32
Foreign language	0	1	3	8	50	21
Latin	0	2	2	2	33	19
Commercial studies	1	7	3	10	17	38
Industrial arts	1	1	2	6	22	14
Home economics	0	3	0	3	36	30
Fine arts	0	0	2	6	28	10
Physical education	0	0	0	10	16	19
Total group	**0**	**2**	**1**	**6**	**35**	**29**

[1] The percents will not total a hundred percent in each row, for some teachers checked 1 of the time classifications and also 1 of the topic or unit classifications. Where 2 or more time classifications were checked the most frequent testing was counted, so there is no overlapping, in the first 5 classifications.

Types of questions to be used.—Another statement requested the teachers to indicate the type of examination which their own constructed tests should be. It is interesting to note that a large majority agreed with the experts in measurement—that the teacher-made tests should consist of a mixture of essay and objective questions. Sixty-eight percent of the teachers favored the use of both types of questions, as indicated in table 16. Twenty percent of the teachers felt that the tests should contain only objective type questions. Only a very small number of teachers, eight-tenths of 1 percent, felt that the tests should contain only essay questions. There are some differences between departments, but in most cases they are rather minor.

TABLE 16.—ATTITUDE OF TEACHERS TOWARD THE TYPE OF TEACHER-MADE TESTS WHICH SHOULD BE GIVEN

Department	Percent of Teachers Agreeing That Self-Made Tests Should Be:			Percent not answering
	All of the essay type	All of the objective type	A mixture of essay and objective questions	
1	2	3	4	5
English	0.3	12	79	8.7
Social studies	1	20	73	6
Mathematics	.8	22	62	15.2
Science	1	25	66	8
Foreign language	0	15	81	4
Latin	0	19	65	16
Commercial studies	.7	24	52	23.3
Industrial arts	3	28	51	18
Home economics	1	15	74	10
Fine arts	0	24	47	29
Physical education	0	19	45	36
Total group	**0.8**	**20**	**68**	**11.2**

[1] There were only 8 no replies, 4 no's for the essay, 1 for the objective, and 3 for the combination.

CHAPTER VIII: WHAT ARE THE ATTITUDES OF TEACHERS TOWARD VARIOUS TYPES OF TESTS?

Tests adapted to textbooks and courses of study.—Recently there has been some slight tendency for authors to prepare standardized tests to accompany their own textbooks. There also have been a number of published courses of study which have included tests to measure the material covered. The results given in table 17 show definitely that teachers like such services. The results have been given by departments with the thought that they might be especially helpful to publishers or course-of-study committees working in any special field. Fifty-one percent of the teachers indicated that they would like authors of textbooks to prepare tests on each section of the book. Ten percent opposed the idea and 39 percent did not answer the question. The teachers would like tests prepared on texts as indicated by a ratio of about 5 to 1.

TABLE 17.—ATTITUDES OF TEACHERS TOWARD HAVING TESTS PREPARED BY AUTHORS OF TEXTBOOKS AND TOWARD HAVING TESTS PREPARED TO GO WITH THE COURSE OF STUDY

Department	PERCENT OF TEACHERS WHO—					
	Like the authors of textbooks to prepare tests on each section of the book			Like tests to be prepared to go with the course of study		
	Agreeing	No answer	Opposed	Agreeing	No answer	Opposed
1	2	3	4	5	6	7
English	48	41	11	38	52	10
Social studies	50	34	16	38	52	10
Mathematics	60	31	9	44	45	11
Science	53	38	9	36	56	8
Foreign language	70	25	5	45	51	4
Latin	62	27	11	32	61	7
Commercial studies	52	44	4	41	56	3
Industrial arts	45	45	10	40	52	8
Home economics	48	47	5	31	64	5
Fine arts	18	76	6	27	71	2
Physical education	26	74	0	29	71	0
Total group	**51**	**39**	**10**	**38**	**54**	**8**

There were slightly fewer teachers answering the question relative to having tests prepared to go with the course of study. The ratio was practically the same as found in the previous paragraph. Thirty-eight percent of the teachers would like to have tests prepared to go with the course of study, while 8 percent were opposed to the idea.

If teacher opinion is a guide, authors of textbooks should prepare tests to cover the various sections of the text. Some of these tests, now available, are included in the text, others are included in a teacher's manual, still others can be purchased in printed form, and in a few cases such tests are furnished free to the users of the text.

Course-of-study committees can develop tests to accompany the course of study. These tests may either be included in the course-of-study monograph or may be issued separately. Some cities have standardized such tests and print their own supply. The committees can be assured that teachers are interested in obtaining such material.

Intelligence test results.—Do teachers want intelligence test results on their pupils? The unequivocal answer is "Yes." Table 18 shows that only 1 percent of the teachers said that they did not care to have intelligence test results on their pupils. Even the teachers in the special subjects—industrial arts, home economics, fine arts, and physical education departments—seemed to desire such results. A few preferred to have the results on only special cases such as failures, discipline cases, or especially brilliant pupils. Most of the teachers wanted the results on all their pupils.

Intelligence test results are available to teachers in most schools. That is, they are available if the teacher takes the trouble to look them up. The uses which teachers make of tests indicate that intelligence test results are used very little by the teachers. It appears that there is a need for the administration in each school to work out a program whereby the results are available to the teachers and also to develop with the teachers the means of making effective use of such results.

TABLE 18.—PERCENTAGES OF TEACHERS WHO DESIRE INTELLIGENCE TEST RESULTS ON VARIOUS TYPES OF PUPILS

Department	Percent of Teachers Who Desire Intelligence Test Results on—					Percent of teachers not answering
	All pupils	Failing pupils	Discipline cases	Especially brilliant pupils	No pupils	
1	2	3	4	5	6	7
English	[1] 78	7	3	2	1	13
Social studies	75	7	4	1	0	17
Mathematics	76	3	2	.4	1	21
Science	71	8	3	1	2	20
Foreign language	75	5	1	0	3	12
Latin	69	11	0	0	2	19
Commercial studies	64	10	4	1	1	24
Industrial arts	66	6	4	1	2	26
Home economics	71	1	1	0	1	26
Fine arts	55	6	6	0	2	35
Physical education	45	0	3	0	0	52
Total group	72	6	3	1	1	20

[1] The percents added across for each department will total more than 100 in some cases for there were various combinations of failing, discipline, and brilliant pupils checked.

Other aptitude or prognostic test results.—Are teachers interested in obtaining test results which will predict a pupil's probable success in their subject? The answer, as given in table 19, is that they are. While such tests are only available in a few of the departments it appears that all departments would like such results if they existed. The two departments in which the largest percentage of teachers would like such results are industrial arts and mathematics. It is interesting that there are such tests available in these two fields. There is a great opportunity for the development of aptitude tests in the various fields.

TABLE 19.—PERCENTAGES OF TEACHERS WHO DESIRE APTITUDE OR PROGNOSIS TEST RESULTS ON VARIOUS TYPES OF PUPILS

Department	Percent of Teachers Who Desire Aptitude Test Results on—					Percent of teacher not answering
	All pupils	Failing pupils	Discipline cases	Especially brilliant pupils	No pupils	
1	2	3	4	5	6	7
English	[1] 68	10	2	2	1	19
Social studies	65	10	4	4	.4	20
Mathematics	70	9	3	1	1	20
Science	64	9	3	1	3	22
Foreign language	68	7	4	0	2	23
Latin	62	11	2	0	2	23
Commercial studies	62	13	2	1	1	24
Industrial arts	73	3	1	1	1	23
Home economics	62	4	0	0	0	34
Fine arts	49	10	4	4	2	35
Physical education	32	6	6	0	0	58
Total group	**65**	[illegible]	**3**	**1**	**1**	**23**

[1] The percents added across for each department will total more than 100 in some cases for there were various combinations of failing, discipline, and brilliant pupils checked.

CHAPTER IX: SUMMARY AND IMPLICATIONS

1. There is great variation in the amount of testing carried on by teachers. Even in a single department the variation in the number of tests given during a semester is great. It would appear that a number of teachers make too little use of tests and quizzes in their classes and that a smaller number of teachers use them too often. It should be borne in mind that examinations which teachers set themselves should be justified from the standpoint of value for instructional purposes. These uses of tests in instruction are at least three: (1) To determine whether or not the class as a whole is learning the material taught; (2) to discover whether an individual pupil is grasping the work, and if not, wherein his difficulty lies so that remedial work may be given; and (3) to motivate the pupils to put forth their best efforts to learn the matter at hand. Studies of the comparative achievement of classes using a large number of tests and those using only a few would be of value in determining the amount of testing which should be carried on in one semester in each department. In an individual school it might also prove helpful to teachers if principals and heads of departments would discuss with them the question of the frequency with which teacher-constructed tests should be given.

Although the amount of testing in the different classes of a department should be approximately the same, there will necessarily be a difference in the amount of testing done among the various departments. Some departments in the high school, such as the social studies department, are concerned more with the acquisition of general principles and their application than with a large number of skills, as is true in the department of foreign languages. In the former case examinations can be held less frequently than in the latter, since the acquisition of general principles requires a longer period of time than does the acquisition of the specific skills which need to be mastered in learning a foreign language.

2. The majority of teachers make use of fewer than four types of questions in the tests they construct themselves. Many teachers in fact use only one type of question. This is especially true among teachers of industrial arts, commercial subjects, and physical education. This is probably a reflection of a lack of training on the part of teachers in the construction of a variety of test types. The need for further instruction in the construction of different types of test questions is indicated. This instruction may be had through further college training, through training in service, and through the cooperative construction of tests in each department. This last, the cooperative construction of tests within a department, is a very desirable procedure and will result in better constructed test items, more representative items (for the course concerned), and a larger number of items, than is the case when tests are made out for each class by an individual teacher.

The fact that teachers use few types of questions shows that they are not adapting their questions to the types of outcomes laid down in the courses of study. In English literature, for example, we desire students to (*a*) learn something of the life and times of the authors of good literature; (*b*) appreciate the enriched meaning found in their literature; (*c*) learn the meaning of new words or old words in a new context; (*d*) learn portions of good literature from memory; and sometimes (*e*) create prose or poetry which has quality. Not all of these outcomes can be measured best by one type of test item. That type of item should be used which creates a situation corresponding most closely to the desired outcome, or which is itself a sample or part of the desired outcome. Therefore, the different new-type test items, such as are mentioned in this bulletin, should be canvassed when making a new examination, and, in addition, variations of these types and also totally different types of questions should be considered. For certain situations the essay type of question may be the best.

3. Looking into the findings in more detail, they show that the types of test items most frequently used were the completion, true-false, and one-word answer. Although outwardly these appear to be easy types of test items to construct, actually there is great danger of their being poorly

worked out. Especially is this true of the true-false test items which have in them many factors likely to interfere with their validity. First of all it must be decided whether the subject matter can be set up in statements which are true or false. The use of the true-false test presumes that the subject matter is not controversial. When this is determined, items must be prepared which are free from ambiguity, that is, the statements should be susceptible of only one interpretation. Especially is it difficult to avoid ambiguity when statements are made in negative terms. Finally, the items should be worded so as to avoid the use of certain terms which have been found to be cues to the correct answer. For example, it has been found in making up true-false test items that the insertion of certain words often means that the test item is more likely to be false or to be true as the case may be. This means that a pupil may even answer such items according to an arbitrary search for these specific cues. For example, 325 true-false items with "always" or "never" occurring in them were found by Weidemann [1] to be 65 percent false and only 35 percent true. On the other hand, he found that of 130 true-false test items continuing comparisons such as "more than", "less than", "the more * * * the less", 65 percent were true and 35 percent were false. Even the length of statement seems to be a determiner of its truth or falsity. Brinkmeier [2] found that long statements—more than 20 words—tend to be true in about 75 percent of the cases. These facts show that it is difficult to make a good true-false statement which does not in its method of presentation give a cue to the correct answer. The investigations of Weidemann and Brinkmeier show that there may be systematic errors in the construction of these items. Therefore, it may reasonably be assumed that there are many incidental factors which may give cues to the correct answers.

In the completion and one-word answer test items it has been found difficult to phrase the items so that one term—the one desired—is the only one that fits. The question

[1] Weidemann, C. C. How to construct the true-false examination. Bureau of Publications, Teachers College, Columbia University, 1926. (Contributions to Education, No. 225.)

[2] Brinkmeier, I. H. Minor studies in objective examination methods. IV—Sentence-length as a specific determiner in true-false statements. Journal of Educational Research, 22: 203–5, October 1930.

should, in other words, bring about accurate thinking or reasoning to a particular conclusion and not be such that the pupil only attempts to find a term which makes the sentence logical but which may not fit the situation the test constructor had in mind. Further, the use of direct quotations should be avoided as these tend to encourage memorization rather than clear thinking.

4. More than two-fifths of the teachers reporting do not have enough questions in their tests to make the tests valuable. Another two-fifths have only enough items to make the tests fairly satisfactory. One of the important advantages in using new-type tests arises from the large number of items which can be answered by pupils in a relatively short period of time. The use of a large number of items increases the reliability of the test in that it affords an opportunity to sample the subject-matter area more thoroughly than does a small number of items. Of two tests equally well constructed and covering the same subject matter, the one having the larger number of items will be the better measure of the pupils' knowledge of the subject.

5. The final examination is usually a lengthy one and it therefore has more possibilities for improvement than have the tests given during the year. In addition to having a greater number of items there is the possibility of using a greater variety of test types. One teacher in six gives a final examination which has been made out by the department for all classes in the same subject. This cooperative method of constructing tests is particularly valuable in the case of semester tests for inasmuch as such tests are used to determine the eligibility of the pupil to pass the subject, and frequently for guidance purposes by counselors and principals, it is extremely important that they be reliable.

6. There are some interesting facts regarding the use of standardized tests during the semester and at the end of the semester. Two departments, English and commercial studies, stand out in their use of this type of test during a semester. The commercial studies are high in this regard because of the policy of some companies to furnish free testing material to the users of their books. English standardized tests are diagnostic in character and therefore they have been found useful by teachers in their regular instructional work.

Forty percent of the teachers in all departments use standardized tests to some extent during the semester.

Standardized tests for the final examination are used mostly in the foreign language, Latin, science, commercial, and mathematics departments. Very few standardized tests are used for final examinations in the English and social studies departments. It was indicated above that English standardized tests are diagnostic. This might account for their use as instructional tests during the semester and their lack of use as final examinations. In the social studies there probably are not enough tests which teachers believe are sufficiently comprehensive for use as final examinations. In general, the small use made of standardized tests as semester examinations may be accounted for as follows: (*a*) Teachers are not aware of all the tests available; (*b*) there are not suitable tests in all subjects for use as final examinations, or (*c*) the expense is too great. It is also felt that teachers may not be sufficiently interested in the use of the results of these more comprehensive tests for guidance purposes.

7. Duplicated tests are used by a large percentage of teachers. Facilities for duplicating tests should be provided in all high schools. Duplicating tests is especially economical when departments construct uniform tests for classes in the same subject.

8. Teachers use tests for a variety of purposes. There is very little agreement, however, on any specific uses. There are only two uses to which more than 50 percent of the teachers subscribe. These are, "To aid in determining the pupil's marks" and "To discover what parts of a topic need to be retaught." These results show that there may be a need for school administrators to emphasize the uses of test results. Some of the more important uses of tests in the secondary field, in addition to the two mentioned, are: (*a*) To discover the approximate quality of work each pupil should do; (*b*) to discover what topics or units need to be taught; (*c*) to stimulate pupils to do better work (through furnishing information to the pupil regarding his achievement); (*d*) to evaluate strengths and weaknesses of instruction; (*e*) to aid in determining the future educational program

of the pupil; and (*f*) to classify pupils into equal ability groups.

9. Two developments in testing practice in which teachers express considerable interest and which will undoubtedly aid the teacher in instruction are (*a*) the development of instructional test booklets and (*b*) the writing of test questions into the course of study. Instructional tests are of value because they have been developed carefully to cover various skills or topics in a subject; they are diagnostic. Even though it may be too costly to use such examinations regularly in all classes, they should be examined so that tests of this character can be constructed by the teacher. Tests written into courses of study can also be suggestive for teachers in constructing their own tests. Such tests, developed at the time the course of study is written, are usually found to be superior since they have been carefully worked out to reflect the important points in the course of study.

10. Curiously, 68 percent of the teachers state that they favor the use of both essay and new-type questions, while in practice only 46 percent actually construct tests of both types for their own use. The attitude which teachers take is in agreement with the theory of test experts. Their practice, however, shows them inclined to omit the use of essay tests. This certainly indicates a liking for new-type test items. The simplicity of their use appeals to teachers. It may be necessary to guard against an oversimplification of these test procedures.

11. Although a majority of teachers express a desire for intelligence test scores made by their pupils, the uses to which tests are put indicate that few teachers really use intelligence test results. The administrators of each school should work out a program whereby the results of intelligence tests are available to the teachers and should develop with the teachers the means of making effective use of such results.

12. Teachers indicate that they would like to have test results available which would predict the pupils' probable success in the subjects they teach. There is need for research in the field of predicting success in individual subjects. Only a few prognostic instruments are now available.

APPENDIX A: SELECTED REFERENCES ON TESTING ON THE SECONDARY LEVEL

BURCH, J. F. *and* MELTZER, H. The new examination. Los Angeles, Calif., Southern California school book depository.

BUROS, OSCAR K. Bibliography of standardized tests, occupational devices, and record forms published in 1933 and 1934. New Brunswick, N. J., Department of education, Rutgers university.

Educational tests and their uses. Review of educational research, vol. iii, no. 1, February 1933.

GREENE, H. A. *and* JORGENSEN, A. N. Interpretation of high school tests. New York, Longmans Green and company, 1936.

HILDRETH, GERTRUDE. A bibliography of mental tests and rating scales. New York City, Psychological corporation, 1933.

JENSEN, MILTON B. An evaluation of three methods of presenting true-false examinations: Visual, oral, and visual oral. School and society, 32- 675–78, November 15, 1930.

KELLEY, T. L. The objective measurement of the outcomes of the social studies. Historical outlook, 21- 66–72, February 1930.

KREY, A. C. What does the new-type examination measure in history? Historical outlook, 19- 159–62, April 1928.

LANG, A. P. Modern methods in the written examination. Boston, Houghton Mifflin company, 1930.

LEE, J. MURRAY. A guide to measurement in secondary education. New York, Appleton-Century company, 1936.

——— *and* SYMONDS, P. M. New-type or objective tests: a summary of recent investigations. Journal of educational psychology, 24: 21–28, January 1933.

——— ———. New-type or objective tests: a summary of recent investigations (October 1931–October 1933). Journal of educational psychology, 25- 161–84, March 1934.

LEFEVER, D. WELTY. Dangers and values in teacher-made tests. Education, 53: 409–12, March 1933.

MONROE, W. S., DEVOSS, J. C., *and* KELLY, F. J. Educational tests and measurements. Rev. ed. Boston, Houghton Mifflin co., 1924.

ODELL, C. W. Traditional examinations and new-type tests. New York, Century co., 1928.

———. The use of scales for rating pupils' answers to thought questions. Bulletin no. 46. Bureau of educational research, University of Illinois, May 7, 1929.

———. Educational measurement in high school. New York, Century co., 1930.

ORLEANS, JACOB S. Manual of instructions in objective tests for use at teachers' conferences. Albany, N. Y., University of the State of New York press. Bulletin no. 902.

PATERSON, D. G. Prparation and use of new-type examinations. Yonkers, N. Y. World book co.

RUCH, G. M. The improvement of the written examination. Chicago, Ill., Scott, Foresman and co., 1924.

———. The objective or new-type examination. Chicago, Ill., Scott, Forseman and co., 1929.

——— *and* RICE, G. A. Specimen objective examinations. Chicago, Ill., Scott, Forseman and co., 1930.

——— *and* STODDARD, G. P. Tests and measurements in high school instruction. Yonkers, N. Y., World book co., 1927.

STUMP, N. F. Oral versus printed methods in the presentation of the true-false examination. Journal of educational research, 18: 423–24, December 1928.

SYMONDS, P. M. Choice of items for a test on the basis of difficulty. Journal of educational psychology, 20: 481–93, October 1929.

———. Tests and interest questionnaires for guidance of high school students. New York city, Bureau of publications, Teachers college, Columbia university, 1930.

———. Measurement in secondary education. New York, Macmillan co., 1927.

TIEGS, ERNEST. Tests and measurements for teachers. Boston, Houghton Mifflin co., 1931.

TYLER, R. W. Constructing achievement tests. Columbus, Ohio, Bureau of educational research, Ohio State university, 1934.

WEIDEMANN, C. C. How to construct the true-false examination. New York city, Teachers college, Columbia university, 1926. (Contributions to education, No. 225.)

WOODY, CLIFFORD, *et al.* Quantitative measurement in institutions of higher learning. Eighteenth yearbook of the National society of college teachers of education. Chicago, University of Chicago press, 1930. Ch. VIII.

——— *and* SANGREN, P. V. Administration of the testing program. Yonkers, N. Y., World book co., 1932.

APPENDIX B: LIST OF PUBLISHERS OF STANDARDIZED TESTS ON THE SECONDARY LEVEL

American Council on Education, 744 Jackson Place, Washington, D. C.

Association Press, 347 Madison Avenue, New York City.

A. S. Barnes and Co., 67 West 44th Street, New York City.

Bruce Publishing Co., 524 North Milwaukee Street, Milwaukee, Wis.

Bureau of Educational Research, University of North Carolina, Chapel Hill, N. C.

Bureau of Educational Measurements, Kansas State Teachers College, Emporia, Kans.

Bureau of Educational Research, University of Oklahoma, Norman, Okla.

Bureau of Educational Research and Service, State University of Iowa, Iowa City, Iowa.

Bureau of Publications, Teachers College, Columbia University, New York City.

Bureau of Public Personnel Administration, Box 1246, Trenton, N. J.

Bureau of Tests and Measurements, Department of Education, University of Virginia, University, Va.

Catholic Education Press, 1326 Quincy St. NE., Washington, D. C.

Center for Psychological Service, 1835 I St. NW., Washington, D. C.

Cleo Press, Iowa City, Iowa.

Cooperative Test Service, 500 West 116th St., New York City.

Doubleday, Doran and Co., Garden City, N. Y.

Eau Claire Book and Stationery Co., Eau Claire, Wis.

Educational and Personnel Publishing Co., 3506 Patterson St., NW., Washington, D. C.

Educational Test Bureau, 720 Washington Ave. SE., Minneapolis, Minn.

Ginn and Co., 15 Ashburton Place, Boston, Mass.

Gregg Publishing Co., 270 Madison Ave., New York City.

C. A. Gregory Co., 345 Calhoun St., Cincinnati, Ohio.

D. C. Heath and Co., 285 Columbus Ave., Boston, Mass.

Harlow Publishing Co., Oklahoma City, Okla.

Harvard University Press, Harvard University, Cambridge, Mass.

Hill-Brown Printing Co., Hamilton, Ohio.

Houghton Mifflin Co., 2 Park St., Boston, Mass.

Ind[illegible] University Bookstore, Indiana University, Bloomington,

Isaac Pitman and Sons, New York City.

R. L. Jones, 227 East Fourth St., Los Angeles, Calif.

Kenyon Press Publishing Co., Wauwatosa, Wis.

LA FAYETTE PRINTING CO., La Fayette, Ind.
LAIDLAW BROS., 36 West 24th St., New York City.
LYONS AND CARNAHAN, 2500 Prairie Ave., Chicago Ill.
MARIETTA APPARATUS CO., Marietta, Ohio.
MANUAL ARTS PRESS, 237 North Monroe St., Peoria, Ill.
NATIONAL COUNCIL OF TEACHERS OF ENGLISH, 211 West 68th St., Chicago, Ill.
NATIONAL RECREATION ASSOCIATION, 315 Fourth Ave., New York City.
NEWSON AND CO., 73 Fifth Ave., New York City.
OHIO STATE UNIVERSITY, Columbus, Ohio.
PALMER CO., 120 Boylston St., Boston, Mass.
PERFECTION FORM CO., Logan, Iowa.
PRACTICAL ARTS PUBLISHING CO., 44 Vista Ave., Elizabeth, N. J.
PRENTICE-HALL, INC., 70 Fifth Ave., New York City.
PSYCHOLOGICAL CORPORATION, 522 Fifth Ave., New York City.
PUBLIC SCHOOL PUBLISHING CO., Bloomington, Ill.
CHAS. SCRIBNER'S SONS, New York City.
TURNER E. SMITH AND CO., 424 West Peachtree St. NW., Atlanta, Ga.
SOUTHERN CALIFORNIA SCHOOL BOOK DEPOSITORY, 3636 Beverly Blvd., Los Angeles, Calif.
SOUTHWESTERN PUBLISHING CO., 201 West 4th St., Cincinnati, Ohio.
STANFORD UNIVERSITY PRESS, Stanford University, Calif.
STATE TEACHERS COLLEGE, Whitewater, Wis.
C. H. STOELTING CO., 424 North Homan Ave., Chicago, Ill.
UNIVERSITY OF CHICAGO PRESS, UNIVERSITY OF CHICAGO, Chicago, Ill.
UNIVERSITY PRINTING CO., 315 14th Ave. SE., Minneapolis, Minn.
UNIVERSITY PUBLISHING CO., Lincoln, Nebr.
WEBB-DUNCAN PUBLISHING CO., 715 North Hudson St., Oklahoma City, Okla.
WORLD BOOK CO., Yonkers, N. Y.