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SIZE AND STATE SCHOOL SYSTEM ORGANIZATION.

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MANY FACTORS ARE RELATED TO THE ESTABLISHMENT OF AN OPTIMUM SIZE FOR SCHOOL ORGANIZATION. BEFORE A STATE CAN ANSWER THE QUESTION OF SIZE, IT SHOULD PERHAPS FIRST ANSWER THE QUESTIONS--WHAT DO WE WANT THE STATE SCHOOL SYSTEM TO ACCOMPLISH, AND WHAT ARE THE STRUCTURAL ALTERNATIVES THAT WILL BE BEST FOR OUR STATE. WHEN THESE ARE ANSWERED, SIZE THEN BECOMES A FACTOR IN DETERMINING THE SUCCESS OF THE PROGRAMS WITHIN THE STRUCTURE. A REVIEW OF THE LITERATURE REVEALS VARIOUS SIZE FIGURES ESTABLISHED THROUGH RESEARCH AND SURVEYS OF EXISTING SYSTEMS. WHILE THESE FIGURES ARE HELPFUL, IT MUST BE REMEMBERED THAT THE IMPORTANCE OF THE SIZE FACTOR IS NOT IN THE NUMBERS THEMSELVES BUT IN WHAT THE NUMBERS CAN PRODUCE IN RELATION TO THE EDUCATIONAL OBJECTIVES. ANOTHER FACTOR WHICH MUST BE CONSIDERED IS THAT THE INDIVIDUAL PARTS OF A STATE SCHOOL SYSTEM STRUCTURE ARE INEXTRICABLY RELATED. A BALANCE IS GENERALLY MAINTAINED, AND TO CHANGE ANY PART WITHOUT GIVING CAREFUL CONSIDERATION TO THE OTHERS MAY CAUSE SERIOUS PROBLEMS THROUGHOUT THE ENTIRE STATE. AS WITH SIZE, STRUCTURE IS NOT IMPORTANT IN AND OF ITSELF BUT ONLY WHEN IT IS RELATED TO THE TASKS THAT STRUCTURE CAN ACCOMPLISH TO MEET THE EDUCATIONAL OBJECTIVES OF THE STATE. TABLES PROVIDED IN THE APPENDIX INDICATE SIZES FOUND IN THE CURRENT LITERATURE AND CITE VARIOUS STATE SIZE RECOMMENDATIONS. (DK)

SIZE AND STATE SCHOOL SYSTEM ORGANIZATION

By

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May 10, 1968

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FOREWORD

The impact of scientific, technological, social,and economic change on the American way of life necessitate a re-examination of the educational system. These changes modify established needs and create new needs to be met by the public school system. Instructional programs and supporting services must be developed to meet these needs.

The primary purposes of school district organization are to make possible: (1) the desired quality or excellence of the programs and services; (2) the efficiency of the organization for providing the programs and services; and (3) the economy of operation, or the maximum returns received for the tax dollar invested in education.

Much controversy exists in the literature and among both professional and lay people concerning the size factor for desirable attendance centers and for school district organization purposes. Mr. William Inman formal School District Organization Specialist with the United States Office of Education, was invited to prepare a position paper concerning size. The following is his report to the Project, and to the citizens of the four states in the Great Plains School District Organization Project.

The value of this paper rests upon its utilization by those with advisory and/or decision making responsibilities about the educational structure in each state. It represents a beginning point for further study and evaluation, and for establishing criteria upon which guidelines can be developed for effective and constructive school district organization.

Respectfully submitted,

Ralph D. Purdy, Director
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May 10, 1968

SIZE AND STATE SCHOOL SYSTEM ORGANIZATION

Introduction

During the past 35 years a voluminous body of literature and informed professional opinion has been developing on the topic of size in relation to the units of the educational organization which comprise a state school system. Size is most often expressed in terms of pupil enrollment - the number of pupils in an elementary school, a high school, a school district, or an intermediate agency.

Much of the literature is in the form of doctoral dissertations investigating one or more aspects of the size factor. Some consists of well-informed professional opinion based upon the experiences of individuals working in one or more sizes of a particular educational unit of a state school system. Research into the size factor also includes individual research efforts of learned professionals in the field of educational administration. State department of education publications provide a source of information on the question of size. Statewide surveys, often conducted by state legislative interim commissions or committees, also provide information on this topic.

The assumption seems to be that size is an important factor to consider when a state undertakes the task of organizing its school districts into units which will produce the educational results the citizenry expects for its investment in public education. The literature supports this assumption. However, size in and of itself is not necessarily important. Instead, the matter of size seems to be related to the objectives upon which a state school system organization is based. Only after such objectives have been carefully developed, studied and considered, does the factor of size become meaningful. To begin a program of school district organization on the basis of size alone would not appear to be a point of departure deigned to meet with great success.

There is suspicion toward increasing the size of the units of state school system structure in these times. While size of a unit in itself has not necessarily caused this attitude of suspicion, it is nevertheless quite apparent. Increased size is often a threat to the autonomy of many units of a state school system. It may even be a threat to the continued existence of many units. Furthermore, increased size, brought about through reorganization, poses a threat to loss of current position for some individuals, especially the chief school administrators of small school districts and the members of boards of education in such school districts. The challenge which emanates from suspicion about larger size, the individual objections of some school administrators, some school board members, and laymen generally, must be forthrightly met by those proposing to change the status quo.

OBJECTIVES AND SIZE

As a state undertakes the rigorous work involved in organizing its educational structure to meet the demands of its people in contemporary society, clear objectives must underlie such a program. Failure to develop and state these, and failure to communicate such objectives to those affected, would be grievous omissions in such an important undertaking.

The following are stated as examples of objectives of state programs of school district organization:

1. Each student should have the opportunity to participate in an educational program which will fully meet his individual educational needs.

2. The educational structure of the state shall be organized to provide an equalization of the costs of education throughout the state.

3. The educational structure of the state shall be so organized to provide students with well-trained classroom teachers.

4. The educational structure of the state shall be organized to efficiently utilize the specialized and technical school personnel in the state.

5. The educational structure of the state shall be organized in such a way that best use of monies expended for education may be realized.

The above objectives may not be all-inclusive, but they do represent the major objectives of program breadth, financial support, well-trained classroom teachers, efficient use of professional staff, and economy in program operation. Let us turn now to the matter of size in relation to these five objectives.

Objective one. The relationship of this objective to size is clear-cut and concise. This is a basic tenet of our democratic society - and of our school systems - which attempt to fulfill society's goal of emphasizing the importance of the individual. The question is: "How does the organization of a school or a school district relate to this, and why is size important?"

Individuals in our schools are seldom alike. They have many different educational needs. Therefore, programs to meet individual needs must have breadth. To have a single program, which forces all students through an identical educational mold, hardly meets this objective.

The literature on the relationship between size of school and educational program breadth is almost unequivocal. Larger schools, with greater pupil numbers can and do offer greater program breadth than their smaller counterparts. Exceptions to this statement would be few and would be largely limited to those rare cases where an unusual amount of local wealth supports a small pupil enrollment.

It is impossible, within the scope of this paper, to make a presentation of all the available literature relating to the first objective. However, previous statements do demand some specifics to support the rather strong generalization made. The overwhelming bulk of the literature on program breadth relates size to programs in the secondary schools. Size literature relating to program breadth in elementary schools is noticeably lacking, except for the pupil achievement factor related to size. The available literature on this factor strongly suggests that students enrolled in elementary schools of 2, 3, or 4 sections per grade level tend to score higher on standardized tests than do pupils in schools of lesser size.

Illustrations of the size factor and program breadth at the high school level are included in the following paragraphs plus Table I in the Appendix. Information from one state study, one regional study, and one nationwide study were chosen for illustrative purposes.

A 1966 Illinois study, entitled, Education for the Future of Illinois, reported the results of a sample of secondary school program offerings by size of school,

using three size categories; (1) under 200 pupils; (2) 400-700 pupils; and (3) over 1,250 pupils. The secondary education program was divided into 13 areas and the number of credits offered in each area, and in each size category, was determined.

In 10 of 13 curricular areas (all except Homemaking, Agriculture, Health-Physical Education) the relationship of size to number of credits was consistent. The larger the size of high school, the greater number of credits offered in each curricular area. In Homemaking, the largest high school size category offered an average of .2 of one credit more than the middle size category. In Agriculture, the medium high school size category offered an average of 2.2 credits more than the average credits offered in the smallest high school size category and offered an average of .1 of a credit more than both the smallest and largest high school size categories.

A study of all high schools in eleven states, conducted at the George Peabody College for Teachers in 1966, by Joe L. Jackson, carefully examined the size factor in relationship to secondary school program offerings. Jackson used twelve curricular areas to represent the broad scope of the secondary school program. He examined the course offerings in these twelve areas, by high school size categories; (1) 99 or fewer, (2) 100-249, (3) 250-499, (4) 500-999, (5) 1,000-1,499, (6) 1,500-1,999, and (7) 2,000 or more. In addition to the size factor, Jackson also used organization pattern-grades 7-12, 8-12, and 10-12 and examined size in relation to organization pattern.

Jackson's research findings indicated that course offerings in both academic and non-academic areas consistently increased in number as enrollment increased, regardless of the grade organizational pattern. Rather striking differences in course offerings were apparent among the size categories in basic skill areas such as English, Mathematics, Science and Social Studies. Wide differences have often been pointed out between offerings in basic skill programs and vocational programs. Seldom have the wide differences in course offerings in basic skill courses been pointed out as clearly as in the Jackson study. Using only one organizational pattern - grades, 10-12, the range of courses offered in the English programs varied from 3 to 5 courses in the 99 or fewer pupil category, to 5 to 16 plus courses in the 2,000 or more pupil category. Similar differences in ranges of course offerings were shown in other curricular areas.

A nationwide study published by the Office of Education in 1965, entitled, Subject Offerings and Enrollment in Public Secondary Schools, examined secondary course offerings by size of high school for the school year 1960-61. Numerous courses in the areas of Language Arts, Social Studies, Mathematics, Science, Foreign Language, Art, Music, Industrial Arts (non-vocational) Vocational Trade and Industrial, and certain Business Education Courses, of the type which are normally considered beyond basic courses, were rather clearly more often available in the larger public high schools.

Perhaps a statement in the nationwide study, "Project Talent," may summarize the relationship which seems to exist between size of high school and breadth of program:

> It would seem that larger school size is a proper and important objective in order to provide a greater variety and depth of course offerings and to make available special services such as groupings, acceleration and guidance.

Objective number two. One need only to make comparisons among assessed

valuations per pupil in the school districts of a state to see the extremes in the fiscal bases which support the local educational programs.

One mid-western state reported extremes of $2,992 and $166,500 in 1967. The residents of the district with the former assessed valuation per pupil paid 10 mills per thousand dollars of assessed valuation while the residents of the latter district paid 20 mills.

The above illustration appears to point out an important aspect of fiscal inequity which exists in many states. It is especially important that the fiscal resources of a state become available to more students in order to reduce the inequities in educational programs which result from the fiscal inequities. This is especially true in those states which depend upon local tax revenues as the major source of support for the schools.

It is virtually impossible to state precisely how large a school district should be in order to have a solid financial base. Revenue sources simply are not located where an equal distribution can be made throughout a state under existing tax structures in many states. However, it can be said that a school district should be large enough to have a tax base capable of supporting an educational program which meets the needs of youth residing in the district.

While state programs of financial support often attempt to provide some equalization of the state monies available for elementary and secondary education, it is well to remember that such programs equalize only to a minimum level - not to an optimum or maximum level.

State programs of school district organization should and do give attention to the reduction of the existing inequities in order to meet the objective of equalizing the financial support burden over a state.

Objective number three. It is desirable that each student be taught by well-trained teachers. The literature seems to support the generalization that good sized schools and school districts generally have staff members with higher levels of professional preparation than do smaller schools and school districts.

As illustrations from the literature on this point, information from three states plus a statement from a U. S. Office of Education research summary are presented below.

A 1966 study of Georgia's school systems reported higher professional training levels for teachers, principals, guidance and library personnel in the state's secondary schools when high schools reached at least the 500 pupil level. This study also reported that the best prepared teachers were found in high schools with over 1,500 pupils.

A 1963 Oregon study concluded that smaller school districts tend to have more non-degree teachers, and that larger districts have a higher percentage of teachers holding regular teachers' certificates. A 1963 statewide study in Ohio indicated that as size of high schools increased, so did the percentage of teachers holding Masters degrees.

An Office of Education summary of research, related to this aspect of the size question, conducted between 1956-1963, stated: "A number of studies found that in larger schools there were more experienced teachers, more teachers with graduate training, larger percentages of teachers teaching in major fields, and less staff turnover."

Size alone is probably not the sole determinant in larger schools and school districts having more highly trained personnel. Factors such as broader programs, greater local wealth, and school system personnel policies which attract better trained teachers, undoubtedly are other reasons which contribute to this differential.

Objective number four. At a time when professionally trained education personnel are often in short supply, it seems imperative that a state wisely use the personnel available.

School districts are often faced with acute personnel shortages in one or more parts of the school program. States are often short of the number of teachers needed as schools reopen each fall. At the same time however, low pupil-teacher ratios may exist in many schools and districts - in the very states in which shortages are being claimed. This situation gives some credence to the point of view that available personnel are not being utilized very efficiently.

Two aspects of staff utilization emerge from the literature. First, the pupil-teacher ratio factor often reveals excessively low numbers of pupils per teacher in small districts. Second, the specialization training of teachers is often wasted, or poorly used, in small school districts. Illustrations of both of these are presented in the following paragraphs and Table II in the Appendix.

A 1961 statewide study of education in New Hampshire concluded that through proper reorganization - placing greater numbers of high school students in larger schools - the actual number of high school teachers in the state's public school system could be reduced. A similar conclusion was reached in regard to elementary teachers. In this instance a state survey group appeared to be indicating that a surplus of teachers was actually employed to compensate for an ineffective school district structure.

Other studies of this aspect of teacher utilization have pointed to excessively low pupil-teacher ratios in small schools and districts. Jackson's regional level study of all the secondary schools in eleven states indicated that only as high schools reached the 500-999 size category did pupil teacher ratios rise to a 25-1 ratio.

Barr, in an Indiana study of pupil-teacher ratios by size of school districts wrote, "The most efficient pupil-teacher ratio was found in systems which enrolled 2,000 or more pupils in grades 1-12. Of 133 school districts in this Indiana study, only 25 reached median pupil teacher ratios of 30 to 1."

The preceding remarks should not be interpreted in terms of encouraging large classes. Instead, they are meant to indicate that it may be possible for a state school system to make better use of the teaching staff already employed through an effective district structure.

Another aspect of utilization is assignment of teachers to major fields of preparation. Jackson's regional study of all high schools in eleven states indicated that the percentage of pupils taught by non-certificated teachers decreased as schools became larger. The largest percentage of pupils taught by those teaching out of certificated fields was found in small high schools. Teachers working in the area of their certification in all fields increased as the size of the high school increased.

> The 1966 Illinois Study of Education stated:
> Another restriction on the utilization of staff
> is the small size of many schools and districts.

> This is particularly true where the district has only one high school. Teachers perform best in one area, or at most two areas, of special knowledge and skill. A school which has only one class in physics and one in chemistry seldom can attract and hold a specialist in these fields, when the major part of his time will be spent teaching in fields in which he has less competence and interest.

On a nationwide basis, the 1962 Census of Governments reported the number of full-time equivalent instructional personnel per 1,000 students by size of school system in the country. The U. S. average was reported to be 43.7 such personnel per thousand enrolled pupils. In an examination of this ratio by size of school systems a quite consistent inverse ratio was noted. The smaller the system the greater the number of instructional personnel per thousand enrolled pupils. Ratios by selected size categories are summarized in Table II.

While the number of instructional staff per thousand enrolled pupils in the 3,000 or more size category may not reach desirable levels indicated by knowledgeable people in the field of school personnel administration, neither is it realistic to assume that small districts are so organized as to effectively use the rather generous ratios identified.

Objective number five. Cost per pupil is an oft-used yardstick of educational finance measurement. Comparisons of this factor among the school districts of a state often reveal wide differences. Such comparisons may also be quite meaningless unless it is determined what such costs actually "buy", in terms of an educational program. It would be possible for district X to have a reported per pupil cost of $550 per pupil. District Y could have a reported cost of $800 per pupil. Yet, the $550 figure may represent a much superior educational program.

The literature consensus is that small school districts and small schools are, when compared to their larger counterparts, more costly to operate when using costs per pupil as a criterion. This then suggests that monies being spent for education in a state may not be spent in a manner in which the greatest educational return may be received.

An inverse ratio is often indicated in this area - as size goes up, the cost per pupil goes down. This appears to be the case up to a point which is not well-defined for all districts, however.

Statewide analyses of costs per pupil in various sizes of school districts often point out the comparatively costly programs of small school districts. Examples from two states appear in Tables III and IV in the Appendix.

Summary - Objectives and Size. Size suggestions are related to objectives. Unless certain sizes can be reached, program objectives may not be met. The importance of the size factor is not in the numbers themselves, but what the greater numbers can produce.

SIZE AND PARTS OF THE STRUCTURE

States have determined how their respective school systems shall be organized. There are three organizational patterns over the country. First is the three level structure composed of the basic school district, the intermediate agency, and the

state education agency. Second is the two level structure which omits the intermediate agency. Third is a single level system in which the state education agency operates the schools. The size factor relates primarily to the first two patterns, plus the individual elementary and secondary schools which are parts of a school district.

Structure, like size, is not important in and of itself. It is important when related to the tasks that structure can accomplish to meet educational objectives in a state.

In the following paragraphs, size and the various parts of the structure are discussed. Tables are included in the Appendix where appropriate, to indicate size suggestions and recommendations of professional organizations or persons.

SIZE AND THE ELEMENTARY SCHOOL

The consensus of the literature seems to suggest a minimum size elementary school be at least large enough to have one teacher per grade level. Recommended as better would be two or three classrooms for each grade level. A maximum seems to be 4 classrooms per grade level. Table V in the Appendix presents recommendations from various professional groups and individuals on the matter of elementary school size.

SIZE AND THE SECONDARY SCHOOL

The preponderance of the literature on size is focused on the American high school. This focus has been perceptibly sharpened since the Conant study in the late 1950's.

The question of size at the high school level is more complex than it may first appear. Size must be related to other units of school organization if it is to be meaningful. For example, to indicate that a high school should have a minimum enrollment of 500 students is somewhat irrelevant unless it is reasonable well understood what program can be offered in a high school of this size. Of all the recent high school size recommendations, the figure of 500 students appears most often. However, much of the literature indicates that only some educational objectives may be normally met with 500 students. Vocational educational needs would probably scarcely be touched with such a student enrollment if the 500 student high school was expected to provide all of the high school program. However, if a vocational high school program was available nearby - operated under the same or a different administrative structure, then the 500 pupil high school might be satisfactory.

The point is simply this - before high school size can satisfactorily be established it should be known how the needs of all students are to be met. A figure of 500 students might be satisfactory under some structural arrangements and most inadequate in other cases.

The information in Table VI in the Appendix illustrates high school size recommendations made in recent years.

SIZE AND THE ADMINISTRATIVE UNIT

(The Basic School District)

In state programs of school district organization it is this unit of the structure which feels the brunt of the movement. The consolidation of the individual schools typically follows the realignment of the school district lines.

How many pupils are required for a complete educational program is the question of size in this case. The work, program, implies different meanings and is again related to the total state educational structure. If program includes primarily what goes on in the classroom plus the general administration, this implies one size figure. If, on the other hand, program includes all the ancillary services to support the classroom and its administration then the size factor changes considerably. Perhaps it is at this point that the writer can make what he believes to be a most vital point in regard to state programs of school district organization. It is simply this:

> THE INDIVIDUAL PARTS OF A STATE SCHOOL SYSTEM STRUCTURE ARE INEXTRICABLY RELATED. A BALANCE EXISTS BASED UPON PROGRAMS OFFERED AT EACH LEVEL AND THE STATUTORY RESPONSIBILITIES WHICH EACH PART MUST ASSUME. TO CHANGE ANY PART, WITHOUT GIVING CAREFUL CONSIDERATION TO THE OTHERS MAY CAUSE SERIOUS PROBLEMS THROUGHOUT AN ENTIRE STATE.

Contemporary size literature on school district size ranges from 2,000 students to 50,000 students. Occasionally, a recommendation may go beyond this. One often observes large differences among size recommendations. It may well be that this is due to vastly different assumptions about what the basic school district should attempt to accomplish. One should carefully examine and understand such assumptions before making generalized comparisons of the size factor.

States which have undertaken programs of district organization in recent years have typically set minimum sizes. This has been done in two ways. The statutes may enumerate the minimum size or statewide standards, developed through the state education agency, may set the minimum size.

The information presented in Table VII in the Appendix illustrates a number of district size recommendations made by organizations and individuals.

SIZE AND INTERMEDIATE AGENCIES

In the period 1962-67, seven states adopted new structures at the intermediate level of school government. Size was a factor considered in each case. Five of the seven states included minimum sizes in either the statutes creating the new structures or in standards to be observed in minimum size ranged from 5,000 to 50,000 students.

Four additional states have developed proposals for changed intermediate structures. Size has been seriously deliberated in each case. One such state has tentatively developed a 100,000 pupil size base. Another has suggested 125,000 pupils.

The factor of size, related to the intermediate agency part of state school system structure, appears to again be objective-oriented. The objective to be met is the provision of program supporting and supplemental services to all children - not just those who happen to live in economically affluent or reasonably heavily populated areas.

In Table VIII in the Appendix the states which have recently changed or added new intermediate structures are listed. Sizes are included where appropriate.

In Table IX in the Appendix these four states considering intermediate structural changes are listed. Recommended sizes are included where these are known.

Some services demand a greater pupil base than others. It obviously requires a greater number of pupils to adequately support an economically feasible data processing service center than it does to provide a speech and hearing therapy program operating from an intermediate agency.

SIZE AND VOCATIONAL EDUCATION

If educational needs are to be met within a state, attention must be given to programs of vocational education at the secondary level. As pointed out earlier, small high school enrollments can probably not sustain a vocational education program of satisfactory breadth of offerings. Many school districts are too small to offer such programs.

The literature does not contain numerous specific size recommendations on this aspect of the program. However, it is the experience of those individuals who have worked in the area of vocational education that a satisfactory program does require a rather large pupil enrollment as well as adequate financial resources to support such a program. Illustrations of this, from personnel in the Rockland County, New York BOCES Unit, and the Division of Vocational Education in the Ohio Department of Education are of some help here. The former have indicated a need for a total enrollment of 75,000 pupils from which to draw potential vocational education students for a broad program. In Ohio, the Division of Vocational Education has stated that approximately 42,000 pupils are needed as a base from which to secure sufficient students to offer and maintain a 12 unit vocational education program.

Only the largest school districts have such numbers of pupils. These exist in reasonably heavily populated areas. Yet, a student in sparsely populated areas may also have a need for, and can benefit both himself and his society by participating in a vocational education program.

In many parts of the country, it is geographically impossible to arrange school district lines to include such pupil numbers. It would probably even be undesirable to do so. Therefore, alternatives must be considered. A number of states are facing up to the problem by forming vocational school districts or area schools or districts where vocational education programs can be made available to high school students. This is a very important part of the total school district organization problem and must receive the careful attention of those who plan a statewide program.

It is the point of view of this writer that a state should not fall into the trap of having to decide on a single type of district for vocational educational programs. Multiple approaches, dependent upon such factors as population and fiscal resources, appear to present a more realistic answer to the problem.

SIZE AND SPECIALIZED SERVICES

An increasingly important aspect of the size question, and one which relates to utilization of available personnel, revolves around the following type of question - About how many students are required for a service to be offered efficiently and effectively?

Clear-cut answers do not appear to be available. This is undoubtedly because situations in which similar services are offered vary so much. For example, a speech therapist serving a small densely populated area would have a far different situation than her counterpart serving an entire county in a sparsely settled area.

However, there are some guidelines to which one may turn for assistance. These should not be accepted as absolutes, however. The information presented in Table X in the Appendix are recommendations from the 1958 Yearbook of the American Association of School Administrators plus those from position papers developed for a 1966 school district organization study in Ohio.

Other programs or services where size is important are included in Table XI in the Appendix. This information is again subject to the limitation of being from one state study, Ohio, in 1966.

There are two remaining pieces in the size picture not previously mentioned. These are student participation in extra-class activities related to high school size and pupil achievement. In the former, it is the opinion of the writer that, the literature is not in any general agreement about whether students participate in extra-class activities to any greater or lesser extent in large or small high schools. There is an agreement that larger high schools do have a larger number of extra-class activities from which students may choose, however.

In the second item, pupil achievement, the literature strongly suggests that pupil academic achievement, as measured by scores on standardized achievement tests, is higher in larger schools, both elementary and high school.

SUMMARY

Much of the information presented is not in the form of what many readers would judge to be sound research on the matter of size. However, it might also be said that a paucity of pure research exists on many aspects of the size question.

In defense of much of the information, it may be said that it does represent, in addition to some research, the soundest professional opinion and counsel that many individuals can express on the basis of their analysis of one or more aspects of size.

Knowledgeable individuals are often somewhat hesitant to express absolute numbers when asked the question beginning with the words, "What size?" This is understandable because of many related factors. Perhaps the most appropriate way for a state to answer the size question is to first answer these questions: (1) What do we want the state school system to accomplish? (2) What are the structural alternatives that will be best for our state?

Once these have been answered, size then becomes a factor in determining the success of programs within the structure.

APPENDIX

TABLE I

ILLINOIS HIGH SCHOOLS - BREADTH OF EDUCATIONAL PROGRAM

Curricular Area	Average Number of Course Credits		
	Under 200 Pupils	400-700 Pupils	Over 1,250 Pupils
Language Arts	4.3	4.8	6.9
Social Studies	3.0	4.1	5.7
Foreign Languages	1.9	4.4	13.0
Science	3.5	4.3	5.6
Mathematics	4.3	4.7	6.5
Business Education	4.7	6.9	8.4
Homemaking	3.5	3.3	3.8
Agriculture	2.4	4.6	0.5
Industrial Arts	2.5	5.3	9.4
Vocational T & I	0.0	0.3	8.8
Fine Arts - Music	1.0	2.8	6.4
Fine Arts - Art	0.0	1.3	2.7
Health - P. E.	1.2	1.3	1.2

Source: William P. McLure. Education for the Future of Illinois, Springfield: School Problems Commission, 1966, p. 33.

TABLE II

NUMBER OF INSTRUCTIONAL PERSONNEL PER 1,000 ENROLLED STUDENTS

Size of School System	Instructional Personnel
3,000 or more pupils enrolled	42.7 per thousand
1,200 - 2,999	44.0
600 - 1,199	45.8
300 - 599	47.5
150 - 299	50.3
50 - 149	53.0
Less than 50	78.1

Source: U. S. Bureau of the Census, Census of Governments, 1962: Compendium of Public Employment Volume III, p. 499.

TABLE III

COLORADO PER PUPIL COSTS (ADA)
CURRENT OPERATING EXPENSES, 1965-1966

District Size	Range	Median
1 - 99	$805. - $1,646.	$989.
300 - 399	$373. - $ 795.	$627.
600 - 699	$447. - $ 699.	$578.
900 - 999	$547. - $ 792.	$599.
1,000 - 3,999	$362. - $ 677.	$515.
4,000 - 6,999	$433. - $ 650.	$474.
7,000 - 9,999	$425. - $ 543.	$481.
10,000 - 25,000	$434. - $ 606.	$480.

Source: Byron Hansford: Comparative Information, 1965-66. Denver: Colorado Department of Education, 1967, p. 3.

TABLE IV

IOWA PER PUPIL COSTS BY HIGH SCHOOL SIZE, 1965-66

Size of High School	1965-66 School Year Costs Per Pupil
50 - 79	$610.
200 - 299	$524.
500 - 599	$457.
700 - 799	$451.
1,000 and over	$476.
State Average	$493

Source: Ellis Hanson, Planning for School District Organization in Iowa, Des Moines: Department of Public Instruction, July, 1967, p. 37.

TABLE V

ELEMENTARY SCHOOL SIZE FACTOR
(Attendance Unit Only)

Individual/organization	Minimum	Optimum	Maximum
White House Conference on Education (1956)	225-250	300 & 12 teachers	
National Education Association Dept. of Elementary School Principals (1954)	-	-	500
National Commission on School District Reorganization (1948)	175 & 7 teachers	300 & 12 teachers	
New York Council for Administrative Leadership (1961)	500-600	-	900
Ohio Department of Elementary School Principals (1966)	300	500	750
Miami, Ohio, School of Education, Guidelines for School District Organization in Ohio	6 rooms 1 teacher per grade plus K room	12-18 rooms	-

TABLE V (Continued)

Individual/organization	Minimum	Optimum	Maximum
State Departments of Education[1]	States which have formulated size statements appear to generally agree on minimum size of one teacher for each grade, optimum of approximately 2-3 sections per grade, and 4 sections per grade as a recommended maximum.		
Howard Dawson, Executive Secretary Emeritus National Education Assn. Dept. of Rural Education	240-280		
William Rosenstengel	1-6 175 1-8 250	525 550	750 825
M. L. Cushman	175 & 7 teachers	-	-
Ralph Sollars Unpublished Dissertation, Ohio State University (1963)	-	300- 499	-
C. C. Carpenter	1-6 175 K-6 225	-	-
David Basher Unpublished Dissertation, University of Iowa (1961)	-	Two sections per grade	-
Clement W. Wood Unpublished Dissertation, University of Colorado (1951)	1-6 175 K-6 225-250	1-6 525 1-8 550	- -

[1]Includes California, Illinois, Iowa, Minnesota, Pennsylvania, Wisconsin, West Virginia, Colorado, Connecticut, Florida, Georgia, Mississippi, Missouri, New Hampshire, New York, Washington.

TABLE VI

HIGH SCHOOL SIZE FACTOR
(Attendance Unit Only)

Individual/organization		Minimum	Optimum	Maximum
White House Conference on Education (1956)		-	700-1,000	-
National Commission on School District Reorganization (1948)		300-450	-	-
State Board of Education Study In Vermont (1964)		Range of 600-2,000		2,000
Interim Commission Study in New Hampshire (1961)		-	500 & 25 teachers	-
Organization of School Systems in Georgia (study by George Peabody College) (1965)		100 in graduating class	800-1,200	-
Lloyd Andrews Unpublished Dissertation, Stanford University (1958)		-	1,200-1,600	-
Thomas Woods Unpublished Dissertation, Stanford University (1958)		-	-	2,000
Clifford Smith Unpublished Dissertation, Ohio State University (1960)		-	800-1,200	-
Calvin Grieder and William Rosenstengel (1954)	7-9	300	700	1,100
	10-12	350	950	1,525
	7-12	350	775	1,150
James Conant (1959)		100 in graduating class		
State Departments of Education[1]		States which have formulated size statements appear to generally agree on either a 500 pupil, or a 100 pupil graduating class, as a minimum size.		
San Mateo County, California, Curriculum Study		1,000	1,500-2,000	2,000
Ohio Association of Secondary School Principals (1966)		-	1,300-1,500	-

TABLE VI (Continued)

Individual/organization	Minimum	Optimum	Maximum
Benjamin Willis former General Superintendent of Chicago Schools	-	2,000	-
Korwitz and Sayres Study in New York	500	600-800	-
William McLure, University of Illinois	700	1,000-1,200	-

[1]Includes New Jersey, New Hampshire, New York, Vermont, Washington, and Wisconsin.

TABLE VII

SCHOOL DISTRICT SIZE FACTOR
(The Administrative Unit)

Individual/organization	Minimum	Optimum	Maximum
National Commission on School District Reorganization (1948)	10,000	-	-
Harvard Dawson, National Education Association; Department of Rural Education (1948)	1,600	9,800-12,000	-
Harlan Beem, Midwest Educational Research Center	-	11,000	-
Edgar L. Morphet, University of California	1,200	10,000	-
Ronald Campbell, University of Chicago	2,000	-	-
R. M. Eyman, for Ohio County Superintendents' Assn.	2,500	10,000	-
Institute of Administrative Research, Teachers' College Columbia University (1961)	-	20,000-50,000	-

TABLE VII (Continued)

Individual/organization	Minimum	Optimum	Maximum
William P. McLure, University of Illinois	5,000-6,000	-	-
Committee for Economic Development (1960)	-	-	25,000
Organization of School Systems in Georgia (study by George Peabody College) (1965)	10,000	15,000-20,000	-
Ohio Master Plan (1966)	3,500	20,000-35,000	-
State Board of Education Study in Vermont	Range of 2,000 to 6,000		
Stephen Knezevich, American Association of School Administrators	-	10,000-12,000	-
St. Louis County, Missouri Study (1962)	2,000		
Connecticut Department of Education	5,000 for regionalized school districts		

TABLE VIII

INTERMEDIATE UNIT SIZE

State	Year	Minimum Size
Colorado	1965	No number required
Iowa	1965	No number required
Michigan	1962	5,000 students
Nebraska	1965	10,000 students used as a guideline
Texas	1965	50,000 students, subject to a sparsity factor
Washington	1965	20,000 students
Wisconsin	1965	25,000 students

TABLE IX

OTHER INTERMEDIATE UNIT SIZE CONSIDERATIONS

State	Minimum Size Recommendation Being Considered
California	-
Ohio	35,000 students
Oregon	-
Pennsylvania	100,000 students

TABLE X

SIZE AND SPECIAL SERVICES

Service Area	Ratio Professional Personnel to Students
AASA	
Art Consultant	1 - 2,500 to 3,000
Child Accounting	1 - 10,000
Educational Materials Consultant	1 - 5,000 to 12,000
Guidance Counselor	
High School	1 - 300 to 400
Elementary	1 - 600
Health Services	1 - 2,500
Homebound Youth	1 - 1,250
Language Arts Consultant	1 - 10,000 to 12,000
Music Consultant	1 - 2,500 5,000
Partially Sighted	1 - 500
Physical Education Consultant	1 - 2,500 to 5,000
Physically Handicapped	1 - 250
Psychologists	1 - 2,500
Speech and Hearing Therapy	1 - 2,000 to 2,500
Visiting Teacher	1 - 2,000 to 3,000
OHIO STUDY	
Art	1 - 500
Guidance - High School	1 - 250 optimum
	1 - 400 maximum
Elementary	1 - 450 optimum
Health Services	1 - 2,500
Librarian	One in Every School
Instrumental Music	1 - 500
Neurological and/or Emotionally Disturbed	1 - 3 to 8 (teacher-pupil ratio)
Physical Education	1 - 500
Psychologists	1 - 2,500
Speech and Hearing Therapists	1 - 3,000

TABLE XI

SIZE AND OTHER PROGRAMS

Program	Minimum	Optimum	Maximum
Adult Education Comprehensive adult education program (25,000 total population)	6,520		
Adult Basic Education Program (7,500 total population)	1,956		
Chartered Evening High School (75,000 total population)	19,560		
Full Time Director (75,000 total population)	19,560		
Education Counselors for the Adult Education Program	19,560		
Business Administration	35,000	100,000 plus	
Data Processing	60,000	100,000 plus	
Pupil Transportation	35,000	and/or based on socio-economic area	
Curriculum Development	35,000	and/or based on socio-economic area	