ABSTRACT

A PLAN OF EDUCATION FOR NORTH DAKOTA: 1966-80

by Brendan J. McDonald

The central purpose of this dissertation is to formulate a plan whereby given the limitations of resources the school system of North Dakota might still attain needed new levels of effectiveness and efficiency.

Three major theses are advanced about the public education system of the State of North Dakota. They are: 1) the school system is essentially ineffective, inefficient, and inequitable; 2) the present state of health of the system is correctable within present fiscal and human resources; and 3) the corrective measures could be assimilated into a potentially effective plan of action that could alleviate the basic ills of the educational system.

The theses advanced were developed through systematic study and evaluation of the 1965-66 North Dakota public school system. Studies of the system were conducted by the North Dakota Statewide Study of Education in several areas, namely: personnel, finances, school district organization, and the instructional program.

The principal theses are examined against the evidence provided by the Statewide Study of Education and elaborated in detail. The method employed was essentially clinical. Three major steps were involved. These were: observation, diagnosis, and prescription. Criteria are applied to the data in ways designed to illustrate a more desirable future educational status toward which North Dakotans might reasonably direct their energies and resources. A plan of corrective measures is described that is intended to serve as a basic guide for improving the viability, effectiveness, and efficiency of the school system. The development period for the plan of action is the 14 year period of 1966-to 1980.

It is concluded that present education conditions could be improved by: 1) appropriately reducing the number of needlessly small schools and school districts, and consequently the need for increasing numbers of teachers; 2) dramatically alter the pattern of public expenditure for education, while adding modest increments to the total expenditure annually for education; 3) develop a new pre-service and in-service training program to fully qualify all of the State's teachers and education service personnel; 4) place and retain these personnel where they are most needed; 5) through these personnel, systematically introduce a program of individualized instruction into each of the State's classrooms; 6) broaden the scope and diversity of curricular offerings to enable each child to form an appropriate program of instruction: 7) enrich on-going programs and extend specialized services through systematic application of modern technology to education communication problems; 8) increase the effectiveness of State education services through a system of intermediate district service centers; 9) seriously involve the State's institutions of higher education in a systematic program of research and personnel development.

The plan formulated is deemed feasible since the State already possesses the basic resources required by these tasks. The proposed plan of action shows concrete ways in which these resources may be used more effectively and efficiently to bring about a more equitable educational opportunity. The thesis and the findings of this study are important to North Dakota and other states. They are important to North Dakota since it appears from the analyzed data that the aim of the school system is not being met, but the situation is largely correctable. They are important to other states since many are in the same situation as North Dakota, and it would appear that if this plan can be applied successfully to North Dakota other states could benefit from a similar approach.

A PLAN OF EDUCATION FOR NORTH DAKOTA: 1966-80

By

Brendan J. McDonald

A THESIS

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CHAPTER I

A STRATEGY FOR IMPROVING EDUCATION IN NORTH DAKOTA

North Dakota is the nation's 17th largest State in area, and 45th in population.¹ Founded in 1889, it derived its principal population from Norway. Russia and Germany. Almost one-third of the population was derived from Norway.² The discovery of gold in Montana in the 1860's and the entry of the railroad in the 1870's increased the population in North Dakota tremendously. The population grew from 190,000 in 1890 to a peak level of 680,800 in 1930. Today, North Dakota is a leading producer of barley, wheat, potatoes and oats. Its population once wholly rural is now clustered in approximately 600 urban or rural village centers. Culturally the State still reflects--among its older residents--the flavor of its Northern European origins. However, the State is losing much of its old world culture. Population has declined. In the 1930's there began a withdrawal from drought-stricken rural areas, which reduced the population by 10 percent by 1950.³ The population has also been urbanizing. The urban population increased by 35.1 percent in the 1950's.⁴

¹The Council of State Governments, <u>The Book of the States, 1966-1967</u>, (Chicago: Council of State Government, 1966).

²Conrad W. Leifur, "North Dakota," <u>Encyclopedia Americana</u>, Volume 20, (New York: Americana Corporation, 1965).

³<u>Ibid</u>.

⁴Ibid.

mechanized, and new industry development lags. As of 1957, two-fifths of the labor force was employed in agriculture.⁵

North Dakotans, however, are seeking to reverse these trends. New power and recreational areas have been developed and more are planned for the future.⁶ They see their future, however, to be principally realized through education. The State has established seven public colleges and universities in the past 80 years. It has extended some limited kind of educational opportunity to every child in the State. To do so, it commits 31 percent of its total governmental expenditure solely for education.⁷ It has not yet succeeded in finding ways, however, to develop its educational institutions to desired levels principally because of limited resources and sparse population. The central purpose of this thesis is to formulate a plan whereby--given the limitations of resources--the school system of North Dakota might still attain needed new levels of effectiveness and efficiency.

The Thesis and Its Development

The aim of the public education system of the State of North Dakota is to offer an appropriate and equal educational opportunity to all educable children regardless of place of residence, physical or mental ability.⁸

The thesis advanced in this dissertation is six-fold, as follows:

⁵<u>Ibid</u>.

⁶Economic Development Commission, <u>North Dakota Economic Conference</u>, Fargo, 1964, (Bismark, North Dakota: Economic Development Commission).

⁷Council of State Governments, <u>op. cit</u>.

⁸State Department of Education, <u>Administrative Manual for North Dakota</u> Public Schools, (Bismark, North Dakota: State of North Dakota).

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1) Despite major efforts by State and local units of government, children and youth in North Dakota Public Schools still do not enjoy an appropriate or equal educational opportunity.

2) The condition is caused in largest part by the interaction of several basic factors, namely:

- a) A system of school organization that tends to dissipate the State's limited financial and human resources.
- b) Reliance upon underprepared teachers and education service personnel that tends to perpetuate antiquated methods of instruction and to mitigate against needed instructional innovation.
- c) Restricted curricular offerings, particularly at the secondary level, that tend to make the content of education increasingly irrelevant to large numbers of the State's children and youth.
- d) Limited coordination and focus of effort on basic development problems among the State's principal education agencies and institutions.
- e) Lack of an appropriate statewide research and planning capacity to introduce a needed rational and technical component into the decisions that affect educational development.

3) These conditions are in greatest part correctable; modest additional funds will be required to initiate needed reforms.

4) More importantly, the State can markedly strengthen the effectiveness and efficiency of its education system, principally through improved utilization of present fiscal and human resources.

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5) To do so, the State must formulate an appropriate comprehensive plan for educational development, and commit itself seriously to its implementation during the next decade.

6) Such a plan can be constructed in the light of present knowledge; elements of a plan are presented as an elaboration of this thesis.

The present pattern of utilization of financial and human resources-more so that the limited quantity of resources--is deemed here to be the cause of inequitable and inappropriate educational opportunity in the State. The conclusion that the present utilization of resources is the major source of education problems is drawn from an examination of the descriptive data about North Dakota education today as reported in Chapter II. A marked improvement in the educational opportunity offered youth would require major modifications in the utilization of financial and human resources. The present conditions could be improved by:

- Appropriately reducing the number of needlessly small schools and school districts, and consequently the need for increasing numbers of teachers.
- Dramatically alter the pattern of public expenditures for education, while adding modest increments to the total expenditure annually for education.
- 3) Develop a new pre-service and in-service training program to fully qualify all of the State's teachers and education service personnel.
- 4) Place and retain these personnel where they are most needed.
- 5) Through these personnel, systematically introduce a program of individualized instruction into each of the State's classrooms.

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- 6) Broaden the scope and diversity of curricular offerings to enable each child to form an appropriate program of instruction.
- 7) Enrich on-going programs and extend specialized services through systematic application of modern technology to education communication problems.
- Increase the effectiveness of State education services through a system of intermediate district service centers.
- 9) Seriously involve the State's institutions of higher education in a systematic program of research and personnel development.

Method Employed in Developing the Thesis

The six elements of the thesis advanced here were developed through systematic study and evaluation of the 1965-66 North Dakota public school system. Studies of the system were conducted in several areas. Those employed in the development of the thesis and cited in this dissertation covered some of the major aspects of the system, namely; personnel, finances, school district organization, and the instructional program. Conclusions drawn from these studies provided the framework for the development of the thesis cited above. This dissertation, in other words, begins with the development of a thesis drawn from the conclusions of research reports. Some of the data from these studies are cited in Chapter II.

The research conducted to investigate aspects of the North Dakota education system was guided by major questions developed around the central aims of the system. The stated aim of the system is to provide an appropriate and equal educational opportunity for all children and yough regardless of place of residence, wealth, mental or physical ability. Some of the broad questions in the major areas of investigation were:

- 1) Is the school district organization in total or in part a barrier to the realization of an appropriate educational opportunity?
- 2) Is the collection, distribution, and the utilization of fiscal resources for education equitable, effective, and efficient?
- 3) Do all students have equal opportunity to secure the educational experiences appropriate to their interests, abilities, and needs?
- 4) Are the human resources of the education system adequate in numbers and levels of preparation? Are they effectively deployed? Are there areas of concentration of the least prepared which promote unequal educational opportunities?

The method employed was essentially clinical.⁹ Three major steps were involved. These were: observation, diagnosis, and prescription. These steps are described as follows:

Observation. The present conditions of the North Dakota Public School system were described in comprehensive data developed by the North Dakota Statewide Study of Education, of which the author was a principal investigator. The State of North Dakota began the study in 1965 for the purpose of providing a detailed description of the educational opportunity in the State. The study covered all major aspects of the educational system including: school district organization and programs, personnel, finance, school enrollments, and school plant needs. Symptoms of ineffective or inefficient organization, use of resources, or deployment of personnel were given particular attention.

⁹E. Kirby Warren, <u>Long Range Planning: The Executive Viewpoint</u>, (Englewood, New Jersey: Prentice-Hall, Inc., 1966).

<u>Diagnosis</u>. Symptoms identified in the observation phase of the examination were diagnosed to ascertain their underlying causes. Corrective measures were formulated to 1) treat causes where possible, and 2) to reduce symptoms when underlying causes could not appropriately be treated directly.

<u>Prescription</u>. Based upon the application of externally developed criteria and standards, a prescription was constructed in the form of a feasible plan of educational improvement for North Dakota. The plan is intended to comply with present and foreseeable resources of the State. The plan was directed toward appropriate and achievable new objectives which, if pursued successfully, should better enable the State to achieve the principal aims of its education system.

Sources of Data for the Observations

The data for the observation phase of the examination were collected by the author in his capacity as a researcher with the North Dakota Statewide Study of Education. This opportunity came about through a doctoral internship program in higher education at Michigan State University. The Statewide Study of Education was undertaken as a joint effort of three of North Dakota's most influential agencies: The North Dakota Legislative Research Committee, the State Department of Public Instruction, and the College of Education of the University of North Dakota. The study was supported by funds from the State Legislature and the United States Office of Education, the latter under provisions of Title V of the Elementary and Secondary Education Act of 1965. The purpose of the study was to describe and evaluate the educational programs and practices in the State, and indirectly to strengthen the North Dakota

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study were school district records and reports submitted annually to the Department of Public Instruction. These materials were supplemented in key areas by selected surveys conducted by the research staff of the study.

Development Period of the Plan of Education

A period of approximately 14 years from 1966-80 is identified as the development period of the proposed Plan of Education for improvement of conditions in North Dakota education.¹⁰ The Plan is presented in the form of progressive steps to be taken by the State to advance each aspect of the educational program from the present to a desired future status. The objectives of the Plan are described in terms of the elements of each major aspect of the program. The elements included in the Plan were: personnel, school district organization, financial support, control and administration, instructional program, special services, and modern educational technology. A diagram to illustrate the plan of action is provided below:

FIGURE I



LONG RANGE PLAN OF EDUCATION: 1966-80

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¹⁰1966 is included as the base year because data for the 1966-67 school year were not available to the researchers at the time of this study.

Definition of Terms

The clinical method employed in the examination of the thesis necessarily involved the use of certain evaluative terms. As a participant in the research, the author consciously endeavored to separate the acts of observation from those of evaluation or diagnosis. The act of evaluation was deemed to be an essential step leading to the plan of action or prescription, hence was not avoided. In evaluating conditions observable in the North Dakota school system, the bases for evaluating were made explicit. Wherever possible, the evaluative criteria that were imposed upon the system were grounded in appropriate theory, research, or logical argument. Authority was used when no other bases were available.

Six concepts were used consistently throughout the analysis. These were:

- 1) Education
- 2) Educational system
- 3) Effectiveness
- 4) Efficiency
- 5) Appropriateness
- 6) Equality

The thesis itself is directed to definition and improvement of the educational system in North Dakota, as opposed to the improvement of education, per se.

Education, in the thesis, is deemed to be the process whereby the State's children and youth come to be inculcated into the culture that prevails in

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the State.¹¹ Two dimensions of the concept are evident. These are: the content of substance of the culture to be inculcated; and the interaction process involving the potential learner, his peers and adults who represent the cultural mode to be emulated.

The educational system, by contrast, is the social organization or vehicle established by the State as a principal means to accomplish the desired education.¹² The curriculum of the educational system corresponds to the content or substance of culture to be transmitted.¹³ The teacherpupil interaction--through classes and other devices--represents the principal process employed by the system.

It should not be construed, however, that the school system is the sole--or even the best--vehicle for education. Other social organizations, both formal and informal, play significant roles in the education of children and youth.¹⁴

The major point to be made, however, is this: an elaborate educational system has been established in North Dakota for the expressed purpose of educating children and youth. It is intended that the system will function in ways that its curriculum and instructional process will in fact educate boys and girls. If this occurs, the program provided by the system may be deemed to be relevant or appropriate.

¹¹Louis Fischer and Donald R. Thomas, <u>Social Foundations of Educational</u> <u>Decisions</u>, (Belmont, California: Wadsworth Publishing Company, Inc., 1965).

¹²<u>Tbid</u>. ¹³<u>Tbid</u>. ¹⁴<u>Tbid</u>.

To accomplish its task well, the system itself should be healthy and viable. The attention of this thesis is directed principally to the vitality and general state of health of the educational system, and only indirectly to the appropriateness of education itself in North Dakota. This clearly delimits the scope of diagnosis and prescription involved in the examination of the thesis. Moreover, it requires the introduction of evaluative concepts that are appropriate to systems analysis, rather than to analysis of educational content and process.

The evaluative concepts employed in diagnosis were: effectiveness, efficiency, and equality. These concepts are described as follows:

<u>Effective School System</u>. A system of schools that achieve the objectives set for it by its policy body.

Efficient School System. A system of schools that optimumly deploy its fiscal, material, and human resources in achieving its objectives. A major aspect of efficiency is necessarily economic resources in the school system as a basic criterion measure.

Equality. A condition in which resources are employed in ways that place no unwarranted burden upon either the supplies or recipient of those resources.

With respect to equality of educational opportunity, an equitable school system allocates its resources consistently with the needs, interests, and capacities of its pupils, precisely in relation to their individual differences.¹⁵ For example: all fourth grade children do not receive the same

¹⁵Myron Lieberman, "Equality of Educational Opportunity," <u>Harvard</u> <u>Educational Review</u>, (Cambridge, Mass: Harvard University Press, 1959) pp. 167-183.

textbook. This would deny them equal educational opportunity because the range of reading capacities in any given fourth grade may be as much as four to six years.

With respect to equality of tax support, an equitable financial support system depends upon a broad distribution of the tax burden, rather than a disproportionate assignment of tax responsibility to a single class of citizens, as for example, property owners.

Overview of the Dissertation

In Chapter I, a thesis was advanced that the North Dakota school system is essentially ineffective, inefficient, and inequitable. Moreover, it was suggested that certain elements of education in the State may be irrelevant or inappropriate for substantial numbers of children and youth. In brief, the educational system is not as viable or healthy as conditions in the State would warrant. Indeed, were the State to continue in its present course of action, it will either have to exhaust its resources to support its education system, or so dilute the quality of work in the system as to make its very continuance suspect. A second thesis was advanced that the present state of health of the educational system is correctable. Indeed, specific corrective measures are identifiable. Finally, a thesis was advanced that the corrective measures could be assimilated into a potentially effective plan of action that—if seriously implemented—could alleviate the basic ills of the educational system and give it the necessary viability to cope with the fundamental problems of education in the State.

In subsequent chapters of this dissertation, these principal theses are examined against clinical evidence and elaborated in detail. In Chapter II,

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the status of the educational system in North Dakota is described. The basic conditions of the system--outlined in Chapter I--are diagnosed and the basis for ascertaining corrective measures are developed. In Chapter III, criteria are applied to the data in ways designed to illustrate a more desirable future educational status toward which North Dakotans might reasonably direct their energies and resources. A plan of corrective measures is described in Chapter IV that may serve as a basic guide for improving the viability, effectiveness, and efficiency of the school system. Finally, in Chapter V, the author comments further upon the feasibility and appropriateness of the proposed plan of action, and suggest ways in which the clinical method employed in this study may be profitably be used elsewhere.

CHAPTER II

PUBLIC EDUCATION IN NORTH DAKOTA: 1965-66

The State of North Dakota operates a public school system that serves approximately 147,500 elementary and secondary pupils. School programs are administered through 527 local school districts which annually expend approximately \$67,500,000 to operate the system. An additional 74 districts retain their legal identity but do not operate schools. Children in these districts are transported to operating districts for all of their future schooling. The expressed aim of the State system is to provide an equaland appropriate educational opportunity for each educable child: moreover, the schools are to be equally free, open, and accessible at all times to all children of legal age.¹

North Dakota has succeeded in providing for access of children to school. Approximately 95 percent of six to seven year old children enter the first grade. Retention of children in school, however, remains a major problem. Of children enrolled in first grade in 1954, only 76 percent completed six grades; 70 percent completed 8 grades, and only 49 percent completed twelve grades. These figures are graphically reproduced in Graph 1.

The State Legislature, the State Department of Public Instruction, and local school district boards are organized to act as partners to provide and maintain an educational program for the State of North Dakota. The

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¹ North Dakota State Department of Public Instruction, Administrative Manual for North Dakota Public Schools, op. cit.



ESTIMATED RETENTION OF 20,000 PUBLIC SCHOOL PUPILS WHO ENROLLED IN FIRST GRADE IN NORTH DAKOTA IN 1954*



Percent

^{*}Calculations are based on survival percentages of pupils from the 1965 to 1966 school years. Figures represent enrollment data as reported in the <u>North Dakota Education Directory</u> for 1965-66 and 1966-67 by the State Department of Public Instruction.

State Legislature empowers the Department of Public Instruction and the local school boards to interpret and manage the educational program within the broad framework established in State statutes. The administrative policies and action of these groups largely determine the adequacy and equality of educational opportunity for each child of the State. These decisions influence the appropriateness of the opportunity with respect to the instructional program, personnel, the structure of the school districts, financial support, the use and extent of instructional aids, and the kind and degree of specialized services made available to each child.

This chapter is devoted to 1) a description of the educational opportunity now available in North Dakota, and 2) a diagnosis of certain problems of the education system to determine probable causes and corrective measures. The description and diagnosis will be covered under each of the three major variables employed in this dissertation, namely: effectiveness, efficiency, and equality.

Equality

Instructional Program

An individualized program, the expressed aim of the North Dakota system, requires that experiences be adjusted to individual differences of pupils. A large portion of both elementary and secondary pupils of the State are not now assured of an appropriate instructional program. Limited programs and instructional aids, and extremely limited supporting educational services contribute to an inequitable program. Adjustments in the system can be made to improve the instructional program.

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Standards for instructional programs in North Dakota schools are set by State law, interpreted into broad guidelines and supervised by the State Department of Public Instruction, and implemented through discretionary authority by the local school district. Within this framework, North Dakota classroom teachers employ their skills, knowledge, and judgement in bringing educational experiences to the pupils.

The State has established in law that certain subjects shall be taught in all schools. The subjects so prescribed are: spelling, reading, writing, arithmetic, language, English grammar, geography, U.S. history, civil government, nature study, and elements of agriculture, physiology and hygiene.² In addition, the schools also must provide physical education, moral instruction, teaching humane treatment of animals, conservation of natural resources and instruction on U.S. and State constitutions.³

The development and promulgation of courses of study, or curriculum guides, as interpretations of these standards, is the responsibility of the Superintendent of Public Instruction.⁴

Elementary Program

One purpose for organizing schools into levels of instruction, such as grades, is to reduce the range of individual differences. A single level

²North Dakota, <u>North Dakota Century Code</u>, Section 15-38-07.

³Ibid.

⁴ <u>Ibid</u>., 15-21-09 -17-

of instruction provides the teacher with a more manageable situation within which adjustments of instruction to individual differences can be more easily accomplished. Traditionally, the levels of instruction are made on an age-grade level basis. Later it will be demonstrated that the graded system itself may hamper rather than help the process of individualizing instruction.

Combination classrooms present a greater range of ages and individual differences and consequently make the adjustment of conventional instruction to individuals difficult. In some schools all first eight grades meet in one room and are taught by one teacher. The instructional load and the range of individual differences under such conditions can become unreasonable. For example, a teacher may have at least one pupil enrolled at each of the eight grade levels. She is expected to prepare at least four lessons per day at each level, an unreasonable task. At present 40.7 percent of the elementary pupils of the State are taught in combination classes. The number and percent of elementary pupils enrolled in combination classes in North Dakota are reported in Table 2.1.

TABLE 2.1--TOTAL ELEMENTARY PUPILS AND THE NUMBER ENROLLED IN COMBINATION CLASSES: 1965-66 (In percent)

Type of District	Pupils in Com Number	bination Classes Percent	Total Elementary Pupils
12-Grade Districts Grade Elementary Districts One Room Rural Districts	35,698 4,558 2,392	36.8 82.3 100	96,772 5,539 2,392
TOTAL	43,639	40.7	104,703

Source: State Department of Public Instruction Personnel Card 2.

The combination classes in the elementary districts is a carry-over of the original one-teacher schools. The most direct corrective measure of combination classes is to organize schools into larger units. Sufficiently large enrollments would permit the division of instruction into levels or grades. Instruction could then be more readily adjusted to individual differences. This plan will not eliminate individual differences, but it will reduce the range of differences each teacher confronts.

<u>Services</u>. An individualized instruction program calls for an appropriate effort of related services. Elementary instruction in North Dakota has practically no support from related educational service and administrative personnel, <u>i.e.</u>, principals, supervisors, librarians, counselors, and others. The Statewide Study of Education reported that only 81 persons were employed as administrators and eight as service personnel to devote 50 percent or more of their time to services or administration. These data are summarized in Table 2.2.

TABLE 2.2--PERSONNEL EMPLOYED AND PUPILS ENROLLED IN THE ELEMENTARY PROGRAM, BY TYPE OF DISTRICT: 1965-66

Type of District	Number of Districts	Teachers	Adminis- tration	Service Personnel	Pupils Enrolled
12 Grade: Large Medium Small	13 61 204	1,569 1,089 1,355	64 31 0	3 1 0	40,252 26,675 29,845
Graded Elementary	81	311	14	4	5,539
One Room Rural	168	218	0	0	2,392
TOTAL	527	4,542	81	8	104,703

Source: State Department of Public Instruction, Personnel Cards 1 and 2.

Secondary Program.

The State has established certain standards by which secondary programs must operate. These standards have been interpreted by the State Department of Instruction under the supervision of the State Superintendent. The subjects to be taught at the secondary level are the same as at the elementary.⁵

Four units of high school work is considered to be the minimum number of courses that may be offered in any one year from the ninth grade to twelfth grade, inclusive.⁶ To be graduated from a secondary program in the State, the student shall have completed a minimum of 17 units of high school work which shall include 11 units of broad general education. The general education minimums are: 4 units of language arts (English), 3 units of social studies, 1 unit of mathematics, 2 units of science (laboratory), 1 unit of physical education.⁷ Students must elect a minimum of six additional units of work presumably in line with their interests and abilities to meet the total requirement of 17 units.⁸ However, the small schools are unable to offer extensive electives, hence most students receive essentially the same course of instruction. (See Table 2.3.)

Secondary education should be individualized to meet the aims of the State. According to Conant, at the secondary level this means a comprehensive instructional program.⁹ A comprehensive program, writes Conant, is

5 North Dakota Century Code, <u>op</u>. <u>cit.</u>, 15-41-06

⁶State Department of Public Instruction, Administrative Manual for North Dakota Schools, <u>op</u>. <u>cit</u>., p. 48

7_{Ibid}.

⁸Ibid.

⁹James B. Conant, <u>The American High School Today</u>, (New York: McGraw-Hill Book Co., 1959).

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Type of Twelve Grade School District	Enrollment	Percent of Total Enrollment	Average Number* of Course Offerings
Large	15,360	35.9	57
Medium	13,331	31.2	35
Small	14,781	32.9	23
TOTAL	42,781	100	

TABLE 2.3--COURSE OFFERINGS BY TYPE OF TWELVE GRADE DISTRICTS

*Only includes number of different offerings.

Source: Irvin Garbe, "Course Offerings of North Dakota Secondary Schools," Statewide Study of Education.

one in which courses are offered that:

- 1. Provide a general education for all secondary pupils.
- 2. Meet the needs of those students who plan to enter the labor market immediately upon graduation.
- 3. Meet the needs of those students who plan to enter college upon graduation.
- 4. Meet special interests of the students. Courses in music and art are examples in this category.

It was found by the Statewide Study that a comprehensive program, according to Conant's standard, existed in only 13 high schools. These few large schools serve 35.9 percent of the secondary pupils. This means that according to this standard, 64.1 percent of high school youth were attending inequitable and inappropriate programs. The number of high school offerings by type of district are listed in Table 2.3.

Limited number of secondary personnel in the small high schools is the cause of limited offerings. The State Department of Public Instruction

reports several high school programs that are staffed by as few as three or four classroom teachers.¹⁰ Conant's standard would call for no less than 18. The most expedient and potentiall effective solution would be to reorganize the smaller schools.

<u>Services</u>. There are more administration special service personnel at the secondary level. Although the picture is brighter at the secondary level, the utilization of personnel is still far from the best possible arrangement. The large number of small high school districts require many more such personnel than available. The data gathered about the number and classification of service personnel at the secondary level is reported in Table 2.4.

TABLE 2.4--PERSONNEL EMPLOYED AND PUPILS ENROLLED IN THE SECONDARY PROGRAM, BY TYPE OF DISTRICT: 1965-66

Type of Twelve	Number of	Teachers	Adminis-	Service	Pupils
Grade District	Districts		tration	Personnel	Enrolled
Large	13	713	158	116	15,360
Medium	61	743	109	54	13,331
Small	204	1,009	204	1	14,090
TOTAL	278	2,465	471	171	42,781

Source: State Department of Public Instruction, Personnel Cards 1 and 2.

It should be noted that the category "Administrator" in Table 2.4 includes 278 school district superintendents and 192 secondary school principals.

¹⁰North Dakota State Department of Public Instruction, <u>North Dakota</u> <u>Educational Directory, 1965-66</u>, (Bismark, North Dakota: State of North Dakota, 1965) p. 49.

The present number of related service personnel could be increased by 755 if the schools were to reorganize on the same per pupil ratio as the national average, i.e., 25.0 pupils per teacher.¹¹

Personnel

One objective of the North Dakota education system is to provide a fully qualified teacher in each classroom of the State. A large proportion of the classrooms of the State are now occupied by underprepared, undersupervised, and underpaid teachers. This is the most difficult problem to correct in the entire system.

General Characteristics of Personnel.

Economic and social factors more so than public policy determine the composition of public school personnel in terms of age and sex. There are some exceptions in those fields where a teaching position obviously is more suited to one sex than the other, such as in home economics or vocational agriculture.

<u>Sex</u>. It is reported by the Research Division of the National Education Association that the percentage of male teachers has been steadily rising since World War II.¹² The report shows that 31.6 percent of the elementary and secondary public school teachers are male. North Dakota ranks 11th

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11Calculation:
Proposed pupil-teacher ratio = 1-25.0
Total pupils = 42,781
Classroom teachers needed = <u>42781</u> = 1710.4
Present staff (2,465) - proposed (1,710) = <u>755</u>
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¹²National Education Association, Rankings of the States, 1966, op. <u>cit.</u>, p. 22. among the 50 states in percentage of male teachers. The percentage of male teachers in the State is 34.0. These data are reported in Appendix Table A.

Age. The mean age of elementary teachers is 41.9 years, and the mean age of secondary teachers is 34.5 years. These data are reproduced in Appendix Table B. It appears from the data that as the size of the enrollment in the school district increases, the average age of elementary teachers tends to decrease. The reverse is true at the secondary level. This condition may be explained in part by the fact that better prepared people at all levels tend to gravitate to the larger 12 grade districts where salaries and working conditions tend to be favorable. They also tend to stay in the larger districts. Hence, the average age of elementary and secondary teachers is approximately the same in large districts.

Secondary teachers tend to be younger, as a group, because of the substantial turnover among qualified personnel, particularly in smaller districts. Elementary teachers generally under-prepared, tend to gravitate to smaller districts where they may be employed, albeit at lesser salaries. Turnover among these teachers is less, since the better districts are not in the market for underprepared teachers. Hence, elementary teachers as a group tend to be older than secondary, and the average age of underprepared elementary teachers older still. The small districts, principal employers of underprepared teachers, find, therefore, to have older teaching staffs.

Professional Preparation.

The State of North Dakota has established in the law that beginning September, 1969, every individual considered qualified to teach in the State

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will have to have earned at least a bachelors degree.¹³ The term qualified used hereafter in this paper shall refer to this level of preparation.

<u>Elementary Personnel</u>. In North Dakota, 59.2 percent of the elementary teachers have less than four years of college preparation and hence, are unqualified according to the new standard. This group instructs 61,954 elementary pupils. These data are outlined in Table 2.5. The average preparation of the nondegree elementary teacher is 2 2/3 years of college academic work.

TABLE 2.5---PREPARATION OF ELEMENTARY TEACHERS, BY TYPE OF DISTRICT: 1965-66 (In Percent)

Type of District	Less Than Bachelors	Bachelors	Masters or Beyond	Pupils Enrolled
12 Grade Districts				
Large	24.0	67.3	8.7	40,252
Medium	68.7	30.7	.6	26,675
Small	80.7	18.9	<u>.</u> 4	29,845
Elementary Districts	90.1	10.4	•5	7,931
TOTAL	59.2	37.5	3.3	104,703

Source: State Department of Public Instruction Personnel Cards 1 and 2.

The major cause for the low level of preparation is the historically low certification standards of the State. Up to the present teachers could qualify for a certificate if they had at least 2 years of college preparation. Improvement of preparation level of personnel is a difficult problem and it is unlikely

¹³North Dakota, <u>North Dakota Century Code</u>, Section 15-36-04.
that any single administrative act would correct the situation. A combination of several feasible measures might provide a solution. They are:

- 1) Inservice education programs.
- 2) Upgrading pre-service programs.

3) Increase the production of teachers. Increases in the production of qualified teachers will occur in the near future as the college population expands. Although output from teacher production may increase, the percentage of college graduates who enter the North Dakota system is declining, according to the Statewide Study of Education.¹⁴ The Study reports that only 40 percent of the teachers produced by State institutions actually enter teaching in the State.¹⁵ Therefore, increased production may not increase the number of personnel for the system.

<u>Secondary Personnel</u>. The level of preparation of secondary teachers in North Dakota schools is high when compared to other states. All secondary teachers have at least earned a bachelors degree. These data are reported in Table 2.6.

The secondary program, however, lacks teachers with masters degrees. North Dakota has 12.4 percent of its teachers hold masters degrees compared to 24.0 percent for the nation.¹⁶ Moreover, the State is gradually losing

15_{Ibid}.

¹⁴ Statewide Study of Education, <u>Educational Personnel in the North Dakota</u> <u>Public Schools</u>, (Grand Forks, North Dakota: University of North Dakota, 1967), p. 26.

¹⁶National Education Association, <u>Selected Statistics of Local School</u> <u>Systems, 1964-65</u>, (Washington, D.C.: National Education Association, September, 1966), p. 21.

		ы	с н н с и с	
Type of Twelve Grade District		Masters	Specialist	Doctorate
Large	20.0	8.8	г.	0.
Medium	39.4	2.1	0.	0.
Small	39.4	1.5	ŗ.	0.
TOTAL	87.4	12.4	5.	0.
Number .	2,149	304	4	0

TABLE 2.6--DEGREES EARNED BY SECONDARY TEACHERS: 1965-66 (In Percent)

Source: State Department of Public Instruction Personnel Card 1.

2,457	8 0	2,465
11	l	11
Number	No report	Total

existing personnel with masters degrees, according to the data reported by the Statewide Study of Education.¹⁷

Corrective measures to attract and retain the more qualified is difficult. Later, a coordinated program of potential corrective action is proposed.

Finance System

The funds provided school districts are disbursed on an inequitable basis. It is reported in Table 2.3 that weighted pupil payments were made by the State in favor of the small elementary district. Justification for this practice was based on isolation and the rising costs of education.¹⁸ With the exception of a few of the most sparsely populated areas of the southwest section of the State, the term isolation as originally applied is no longer justifiable. Many of the school units, it was concluded by the Statewide Study of Education, form a circle around the major urban centers of the State.¹⁹ In other sectors, clusters of small school districts continue to operate independently, even though they are adjacent to each other and could readily be consolidated into potentially more effective units.

The costs of education is rising, but to perpetuate by favored payments districts that are largely ineffective represents a needless drain of State funds. Equitable support of districts on pupil payments would likely result in reorganization of many of the small elementary districts.

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¹⁷Statewide Study of Education, Educational Personnel in the North Dakota Public Schools, <u>op</u>. <u>cit</u>.

State Department of Public Instruction, Administrators Manual for North Dakota Public Schools, <u>op</u>. <u>cit</u>., p. 90.

¹⁹Statewide Study of Education, A Map of North Dakota School Districts; 1965-66, <u>op. cit.</u>

Effectiveness

Instructional Program

Boyles reports that students from small school districts do not perform as well on standardized achievement tests at the ninth and eleventh grades as those from larger districts.²⁰ In part, such differences in achievement can be attributed to the dearth of instructional materials available to students in the small schools. More importantly, however, is the difference in level of preparation of instructional personnel. A higher percentage of nondegree elementary teachers are employed in small 12 grade districts than others. These data are compiled in Table 2.5.

Low certification standards, low salaries, and traditional reliance on local residents to provide teaching manpower in the rural school districts are the major causes of the high percentage of nondegree personnel. This is the most difficult problem to correct in the education system.

Personnel

Certification

The granting of a certificate to teach is an act of licensure, or admission to practice. Certification, as public policy, is a device to guard the public schools, insofar as possible, against inadequate or inferior teaching.

²⁰Gary Boyles, <u>Summary Analysis of 1965 Iowa Test of Educational Develop-</u> <u>ment State of North Dakota</u>, A Report prepared for the Statewide Study of Education (Grand Forks, North Dakota: University of North Dakota, 1966). p. 5.

Two classes of teaching certificates are issued in the State of North Dakota: First Grade Professional and the Second Grade Professional.²¹ The First Grade is granted only to those individuals who have completed a fouryear degree program in college. It qualifies the individual to teach either at the secondary or elementary level. The Second Class Certificate is issued upon graduation from a two-year teacher training program, and allows the individual to teach at the elementary level.

Each of the two certificates are subdivided into classes: permanent and temporary. On first application, a teacher is granted a temporary teaching certificate. Upon completion of 18 months of subsequent and successful teaching experience, she is eligible for a permanent teaching certificate that is valid for life.²²

These patterns, first established in 1911 by the North Dakota courts, lag far behind present day practices and professional recommendations. At the present time there are only 10 states that still issue permanent certificates. Only North Dakota issues a permanent license to nondegree teachers.²³ The number and types of certificates issued are reported in Appendix Table C.

Professional Growth of Personnel

A small proportion of the State's elementary teachers return to college for additional work. Those who do return, few take an appreciable amount of

22_{Ibid}.

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²¹ State Department of Public Instruction, <u>Administrative Manual for the</u> North Dakota Public Schools, op. cit., p. 66.

²³Elizabeth W. Woellner and M. Aurilla Wood, <u>Requirements for Certi-</u> <u>fication</u> 1963-64, (Chicago: The University of Chicago Press, 1963).

work... Specifically, 43.9 percent of the nondegree elementary teachers with five or more years of experience had earned some college credits in the past five years. The State average for this group of returnees is about 16.2 semester hours in five years, or slightly more than three semester hours per year. At this rate of progress, the average nondegree teacher would need 15 years to complete her degree. Considering that the average age of elementary teachers is 49 years, it is unlikely that many will earn an appropriate degree before retirement age. These data are reported in Appendix Table D.

Inducements in the form of certificate regulations and salary increments based on additional work are important in the system. The policy and practice of issuing permanent certificates to all personnel regardless of preparation eliminates one major inducement or control to get teachers to return for additional training. Earthman reports that nondegree elementary teachers themselves believe that the most influential incentive to return to college is a State certification regulation that requires further preparation.²⁴ Few feel that appeals to personal or professional commitment would be sufficient to induce them to return.²⁵ Additionally, only 67 out of the 527 school districts operate on salary schedules with provisions for increments based on level and additions to preparation.²⁶ The situation is further complicated by the fact that salary schedules in local districts do not add appropriate inducements for further study.

²⁴Glen Earthman, <u>The Nondegree Teacher, 1965</u>, (Grand Forks, North Dakota: University of North Dakota, 1965), p. 20.

25 <u>Ibid</u>.

²⁶North Dakota Education Association, <u>Salary Study</u>, 1965-66 (Bismark, North Dakota: North Dakota Education Association, 1965).

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Supervision of Personnel

Supervision is an attempt at quality control of classroom performance. Those districts that are concerned with quality performance normally enploy supervisors of instruction. Frequently, the principal is assigned supervisory duties. Such arrangements require no less than one full-time principal per school. Yet, very few school districts in North Dakota provide for instructional supervision. These data were reported in Tables 2.2 and 2.4.

Teacher Turnover

North Dakota experiences a very high rate of teacher turnover. For the year 1964, 20.2 percent of the teachers failed to return to teaching positionsd in the State. The data relevant to turnover of personnel are reported in Appendix Table 3. The turnover is high when compared to the national average of 11.4 percent.²⁷

Lentz conducted a survey to find out why teachers leave the State to teach elsewhere. In all major categories of teacher characteristics, low salary was cited as the major reason for leaving the State. The high rate of turnover would not in itself harm the system, were nondegree replaced by degree teachers. But such is not the case. Nondegree teachers tend to remain in their positions, particularly in the small districts. Better qualified teachers tend to leave their positions in these districts. Hence, teacher turnover tends to have a negative effect upon the quality of personnel within the State.

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²⁷National Education Association, Selected Statistics of Local School Systems, <u>op. cit.</u>, p. 21.

²⁸Robert Lentz, <u>Reported Reasons why Teachers Leave North Dakota to</u> <u>Teach Elsewhere</u>, A report prepared for Statewide Study of Education, (Grand Forks, North Dakota: University of North Dakota, 1967).

Salaries

Compared to national averages, North Dakota salaries are low. The National Education Association reports that 1965 the national average salary paid elementary teachers was \$6,293.²⁹ The North Dakota average for the same year for elementary teachers was \$4,708. These are reported in Table 2.7.

TABLE 2.7--AVERAGE SALARIES EARNED BY ELEMENTARY AND SECONDARY TEACHERS: 1965-66 (In Dollars)

Type of District	Elementary	Secondary
12 Grade Districts	5 001	
Large	5,031	6,674 5,625
Small	3,971	5,348
Elementary Districts	3,828	-
TOTAL	4,708	5,887

Source: State Department of Public Instruction Personnel Card 1.

It is generally regarded as a responsibility of the local school district to establish a salary schedule which shows salary steps and increments based on level of preparation, experience, assignment, and meritorious performance. In 1965-66 only 67 of the 278 high school districts offered to their teachers official salary schedules.³⁰ In the majority of cases,

³⁰North Dakota Education Association, <u>op</u>. <u>cit</u>.

²⁹National Education Association, Rankings of the States, 1966, <u>op. cit.</u>, p. 23.

existing salary schedules provide regular increments only for level of preparation and years of experience. Moreover, small districts typically offer few salary inducements. Were the average enrollment of districts to be increased-through appropriate reorganization-appropriate new salary schedules could be justified. In the interim, the State may well consider a policy that provides increasing salary inducements to qualified teachers, while holding salary levels relatively constant for nondegree teachers.

School District Organization

In order to provide an equal and appropriate educational opportunity, teachers and pupils must be brought into a structural relationship that will achieve this aim. North Dakota now conducts its program in 527 local school districts. In sum, the organizational pattern promotes inequitable education and is both inefficient and ineffective. Most of the districts are too small to provide an appropriate program at reasonable cost. Moreover, the State finance system rewards small districts by special assistance, hence, this aspect of the organizational pattern has become self-perpetuating.

Certain corrective measures could make a marked difference in the equality of educational opportunity to a large portion of North Dakota youth.

Background

Early in the history of the State the legislature was empowered to establish a uniform system of public schools. The legislature, in turn, established local school districts in all sections of the State. The major purposes of local school districts were to bring children and teachers together, to construct and equip buildings, to appropriate funds for educational purposes, and to provide an administrative organization through which the

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educational program could be planned and directed.³¹ The expressed intent was to provide efficient and effective organization for the administration of the program.

The first schools were one teacher rural schools. The demands made on the original one teacher school districts were simple and easily met. Finance and other resources were used effectively, as the school presumably were able to provide the kind of educational program the people wanted.³²

Conditions have changed. New educational needs have been identified, and with the development of new administrative procedures, adjustments in school district organization become necessary.³³

As the belief gradually developed and gained widespread acceptance, that more and more children and youth ought to have the advantages of a secondary education, adjustments in school district organization in rural areas became necessary. Small school districts--once that had been established for a very different purpose--can no longer provide a satisfactory program of secondary education. Consequently, a type of school district organization has had to be developed that could do the job. Small local school districts were consolidated in order to provide necessary resources to support an appropriate and equitable educational opportunity.³⁴

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³¹Carrol Atkinson and Eugene T. Maleska, <u>The Story of Education</u>, (New York: Bantam Books, 1962).

³² Ibid.

³³ <u>Ibid</u>.

³⁴ American Associations of School Administrators, <u>School District</u> <u>Organization</u>, (Washington, D.C.: American Association of School Administrators, 1958).

Present Pattern of North Dakota Organization

The present organization pattern is a mixture of the original oneteacher schools established at the turn of the century and a variety of forms of reorganized districts. These are:

- 1. Comprehensive districts that offer 12 grades of instruction.
- 2. Consolidated rural elementary districts that offer 8 grades of instruction.
- 3. Isolated one-teacher schools.
- 4. Nonoperating districts whose children are sent elsewhere to school on a tuition basis.

The number of districts by types and their enrollments are reported in Table 2.8.

Type of District	Number	Pupils E Elementary	Inrolled Secondary	Percent of Total Enrollment
12 Grade Districts Large Medium Small	13 61 204	40,252 26,675 29,845	15,360 13,331 14,090	37.83 27.12 29.78
Grade Elementary	81	5,489		3.72
One Room Rural	168	2,442		1.65
Nonoperating	74			
TOTAL	601	104,703	42,781	100

TABLE 2.8--NUMBER AND TYPES OF SCHOOL DISTRICTS AND PUPILS: 1965-66

Source: Selected Descriptive Data of 1965-66 North Dakota Personnel, Statewide Study of Education.

Characteristics of an Effective Organization

As earlier defined, an effective school district is one that meets the educational goals and aims of the State. The aim of the State is to provide an equitable and appropriate education to each child of the State. More specifically, the characteristics of the effective school districts are:

- It provides a complete instructional program, in grades one through 12, that is adjusted consistently to the individual differences of its pupils.
- 2. It provides a fully qualified instructional and administrative staff to sustain the program.
- 3. It provides a full array of educational services and materials necessary to conduct the program.

Effectiveness of the North Dakota Organization

School district organization in North Dakota is ineffective in providing each child equal access to an appropriate educational opportunity. As a whole, it is ineffective in providing a full program, sufficient and qualified staff, and full educational services.

Secondary Program. The inequite is and ineffectiveness of the high school district organization is reflected in limited offerings reported in Table 2.3. Course offerings by secondary schools of the State range from 13 to 97. Conant establishes 450 pupils as the minimum enrollment to offer a comprehensive secondary program. By this standard, 65 percent of the secondary pupils of North Dakota do not have appropriate secondary education.

The recognized cause of the limited programs is preponderance in the organization of small school units. School district organization no longer

conforms to the pattern of residence of the State. The Statewide Study of Education reports that 90 percent of the secondary pupils in North Dakota reside within 20 miles, the equivalent of a one hour drive by bus, of a high school district enrolling at least 150 pupils.³⁵ The State could resolve many of its problems, therefore, by reorganizing local districts consistent with present residence pattern. In other words, 90 percent of the children could be enrolled in districts that enroll no fewer than 150 pupils in the upper four grades. This observation will later be incorporated into a plan of action as a principal element.

<u>Secondary Personnel and Services</u>. Although secondary teachers have earned at least a bachelors degree, the proportion of masters degrees in the system is low compared to national averages.³⁶ Moreover, there is a reported increase in losses of those with masters degrees, as shown in Appendix Table E. Teachers report that salaries and lack of professional advancement are principal reasons for leaving the State. Appropriate reorganization into larger units, coincident with the reassignment of qualified personnel in roles as special service and administrative officers, might well provide needed new avenues for professional advancement and for increased salaries.

<u>Elementary</u>. The school district organization is ineffective at the elementary level in that it fails to provide an adequate program for all pupils, qualified staff, and educational services.

³⁵Statewide Study of Education, <u>Education in North Dakota, 1965-66</u>, (Grand Forks, North Dakota: University of North Dakota, 1967).

³⁶ National Education Association, Rankings of the States, 1966, op. <u>cit</u>.

Only 40 percent of the present elementary teachers of the State are qualified according to the most recent standard established by the State.³⁷ Small districts have the most difficult time of obtaining and retaining fully qualified personnel. Low salaries, poor facilities, lack of instructional materials, isolation, and the difficult task of adequately handling combination classes of wide instructional range are cited as the causes.³⁸ Organization into larger school units in residential areas with broader financial bases should aid in attracting and retaining qualified personnel. Larger school units and the division of instructional assignments along grade levels would resolve the limited offerings of small schools.

<u>Financial Base</u>. Small districts have a limited financial resource and are often unable to provide desired services. The small elementary district of the State could be described as a "subsistence level" organization in the sense that it has sufficient funds to sustain itself, but insufficient to provide effective services. The low ability of small districts compared to large districts is presented in Appendix Table F.

The perpetuation of the small districts has been aided by special State subsidies. Weighted per pupil payments are made to small elementary districts on the basis of isolation, and rising costs of education.³⁹ Many of the districts that receive isolation subsidies are within 5 to 10 miles of major urban centers.⁴⁰ The schedule of per pupil payments as outlined by the State Department of Public Instruction is presented in Table 2.9.

³⁷Statewide Study of Education, Educational Personnel in North Dakota Public Schools, <u>op</u>. <u>cit</u>.

³⁸Lentz, <u>op</u>. <u>cit</u>.

³⁹North Dakota State Department of Public Instruction, Administrative Manual for North Dakota Public Schools, <u>op</u>. <u>cit.</u>, p. 91.

⁴⁰Statewide Study of Education, A Map of North Dakota School Districts, 1965-66, (Grand Forks, North Dakota: University of North Dakota, 1966).

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Type of School	Pupil-t	eacher ratio	os and per	pupil payme	ents
One Room Rural	(1-16)	\$225.00,	(17-20)	\$150.00,	over 20 none
than 100 A.D.M.* Elementary with 100	(1-20	\$187.00,	(21-25)	\$150.00,	over 25 none
or more A.D.M.* High Schools	(1-30) \$198.00	\$150.00, per pupil	over 30 m	ione	

TABLE 2.9--1965-66 PER PUPIL PAYMENTS BY THE STATE OF NORTH DAKOTA

Source: State Department of Public Instruction, <u>Administrative Manual</u> for North Dakota Schools.

*Average daily membership is the number of pupils belonging and comprises those absent and present.

The most direct correction for the perpetuation of small school districts is to withdraw the special State subsidies.

Financial System

Effectiveness of the financial support system is measured by the proportion of the expended funds used for the support of desired programs. The financial support system of North Dakota is largely ineffective since it:

- Expends close to 63 percent of funds for instructional salaries for elementary teachers who are unqualified.
- 2. Expends 32.3 percent of funds for the operation of small high school programs that do not meet the goals of the State, and are found to be largely unnecessary in the system.
- 3. Helps to perpetuate ineffective programs of the elementary school districts by providing weighted payments in their favor.

The dissipation of funds through the support of inefficient and ineffective school districts tends to reduce the full effect of North Dakota financial effort for education. Concentration of funds in support of those programs that achieve, or nearly achieve, the desired goals will likely result in greater access to an appropriate education for an increase number of students. It should also aid the medium sized high schools to increase in size, support, and quality and breadth of educational service. In sum, it should increase the effectiveness of the system.

Efficiency

Instructional Program

Instructional Aids. The present average annual expenditure for library books and audio-visual materials per child at the elementary level is approximately \$3.00. These data were drawn from Appendix Table 1.

Within the present expenditure level the State could secure greater utilization of instructional aids through a higher concentration of pupils per classroom. For example, an expenditure of \$3.00 per child provides \$70.50 for classroom expenditure (\$3 x 23.5 pupils per classroom: \$70.50). If the pupil-teacher ratio were increased to 25.9, the expenditure per cla-sroom would be increased to \$77.70, or nearly 10%. The increased unit expenditure, as proposed here, would likely benefit all pupils of the classrooms.

The Statewide Study of Education reported that in 1965-66 only \$5.60 was expended per secondary pupil for library and audio visual aids.⁴¹

As in the case of the elementary program, more students could benefit from the same level of expenditures if the schools were to reorganize into

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⁴¹ Statewide Study of Education, <u>Financing Public Education in North</u> <u>Dakota</u>, (Grand Forks, North Dakota; University of North Dakota, 1967), p. 19.

larger units. For example, the present annual expenditure for library and audio visual aids per school district is approximately \$862.40.42

The consolidation of high schools below enrollments of 150 with larger units would increase the potential expenditure for library and audio-visual material for each secondary school from \$862.40 to \$3,237.47.⁴³

Personnel

<u>Deployment</u>. The present personnel work force is deployed inefficiently. An increase in the pupil-teacher ratio to equal national averages, for example, would relieve many who are now teaching for new assignments as supervisors or administrators. The average pupil-teacher ratio is calculated at one elementary teacher for every 23.5 pupils. The national average is reported at 25.9 pupils per teacher.⁴⁴ The data on pupil-teacher ratios in North Dakota are reported in Table 2.10.

42 Calculation:

<u>42,781</u> pupils = 153.9 pupils per school 278 districts 154 pupils x \$5.60 expenditure per pupil: \$862.40 per school annually.

⁴³Calculation:

Number of schools: 278 Number of schools below 150 pupils: 204 Proposed number of schools: 278 - 204 = 74 Approximate total present expenditure = \$5.60 x 42,781 = \$239,573 Potential per school expenditure: 239,573 : \$3,237.47 74

44 National Education Association, <u>Rankings of the States, 1966</u>, (Washington, D.C.: National Education Association, 1966).

Type of District	Number of Teachers	Self Contained	Combination	Total
One Room Rural	218	0	11.2	11.2
High School	4,013	25.3	14.7 19.7	24.7
TOTAL	4,542	25.1	16.8	23.5

TABLE 2.10--ELEMENTARY LEVEL PUPIL-TEACHER LOADS: 1965-66

Source: State Department of Public Instruction, Personnel Card 2.

If the North Dakota average were raised by reorganization of attendance units to equal that of the national average, nearly 100 classroom teachers could be released for administrative or service assignments.⁴⁵

<u>Personnel Unit Costs</u>. Small districts organization dissipates State funds through high unit costs. A unit cost measure for comparison of districts is the per pupil expenditure for teacher salaries. A comparison of teacher salaries on a per pupil basis in North Dakota was conducted by the Statewide Study of Education.⁴⁶ It is reported that the smallest twelve grade districts pay more for secondary teacher salaries than other types, and yet employ less qualified personnel. The small high schools spend an average

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Proposed pupil-teacher ratio = 25.9

Total pupils = 104,703

Classroom teachers needed on a 25.9 pupil-teacher ratio = \frac{104,703}{25.9} = 4042.5

Present Teaching staff (4,542) - proposed teaching staff (4,042) = 100.
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⁴⁶Statewide Study of Education, <u>Selected Descriptive Data of North</u> <u>Dakota Public School Personnel</u>, (Grand Forks, North Dakota: University of North Dakota, 1967).

⁴⁵ Calculation:

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of \$361.70 per pupil as compared to \$268.15 per pupil by the largest districts. These data are presented in detail in Table 2.11.

Type of District	Elementary	Secondary	Total
12 Grade Districts Large Medium Small	\$235.21 174.45 175.90	^{\$} 268.15 308.58 361.70	^{\$} 244.84 219.21 235.34
Elementary Districts	231.10	-	231.0
TOTAL	\$201.04	\$312.34	\$233.96

TABLE 2.11--PER PUPIL EXPENDITURES FOR TEACHERS SALARIES: 1964-65

Source: Department of Public Instruction Finance Cards, 1964-65.

Organization into secondary school units with higher pupil teacher ratios would measurably increase the level of qualification of staff that could be supported, and yet reduce the cost per pupil for instructional personnel.

Finance

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Financial support of public education in North Dakota is inequitable, inefficient, and ineffective. More specifically:

- 1. It is inequitable in that it rewards the small elementary districts with favorably weighted pupil payments.
- 2. It is inefficient in that it tends to perpetuate small elementary and high school districts that, for the most part, are unnecessary in the system.
- 3. It is ineffective in that the inequities and inefficiencies of the

system dissipate limited resources and thereby, make achievement of the desired program difficult.

The present situation can be corrected and utilization of resources can be made more effective.

Present System of Support

It is the practice of the State and local school districts to rely on property tax as the major source of revenue for the general operation of the public education system. Both the State and the local school district levy property taxes for the support of schools. The breakdown of the sources of funding of North Dakota public schools are reported in Table 2.12. The General Fund is the major resource for financing the basic educational service rendered by the school district. It is the source for the support of the operation of the schools, and the General Fund is maintained by all operating school districts of the State.⁴⁷ The General Fund has two major sources of revenue derived from local property tax; the local property tax, and the county equalization fund operated by the State.⁴⁸

District property tax levies are established by the local school district, but the limitations for encumbering the properties of the district are controlled by State statutes. In regard to tax limitations, the State Department of Public Instruction states:

⁴⁷ State Department of Public Instruction, Administrative Manual for the North Dakota Public Schools, <u>op</u>. <u>cit</u>., p. 36.

⁴⁸ <u>Ibid.</u>, p. 37.

	Prope	rty Tax	Other T	ax Sources	
Expenditure	Local	County	State	Federal	Total
General Fund in Local Districts	32.8	18.1	22.4	6.3	79.6
Special Building and Debt Retirement	14.9	-	-	•9	15.8
Special Funds and Miscellaneous	4.6	-	-	-	4.6
TOTAL	52.3	18.1	22.4	7.2	100

TABLE 2.12-SOURCE OF FUNDS FOR PUBLIC SCHOOLS: 1965-66 (In Percent)

Source: Statewide Study of Finance, Tables 29 and 56. 100% = \$574.48.

The normal maximum levies for the General Fund of school districts are as follows:

Four-year high school	27	mills
Elementary school district		
of two or more teachers	22	mills
One room rural schools	19	mills

Although these limits prevail it is permissible for a school district to vote up to 75 percent increase in its normal maximum levy under certain provisions of state law.⁴⁹

Payments are made to school districts on the basis of level, average membership, and type of district. Compensation or weighting of payments are made to the small school districts for sparsity of population and greater educational costs. These data were summarized in Table 2.9.

Efficiency of the Present System

A high percentage of education funds are expended inefficiently when used to perpetuate elementary and small high school districts that do not

49 <u>Ibid.</u>, p. 38. offer the desired program. Moreover, the present residence pattern and modern school bus transportation systems make the perpetuation of elementary and small high schools unnecessary in most areas of the State.

The Statewide Study of Education reports that 90 percent of the secondary pupils of the State live within 20 miles, or approximately a one hour bus ride, of high school districts that now enroll at least 150 pupils.⁵⁰ According to the data reported in Table 2.3, 32.9 percent of the secondary pupils are enrolled in 204 high school districts with fewer than 150 pupils in the upper four grades. For the year 1965-66 it is reported that 32.3 percent of the State education fund were expended for the support of the elementary and secondary programs in these districts. The percent of funds expended by type of district are reported in Appendix Table G.

The original pattern of schools at an earlier time served the residence pattern of the State. Through a substantial population loss during the 1930's and 1940's, and a steady migration from rural to urban centers, the residence pattern has changed.⁵¹ Some school districts have been perpetuate by State and local effort despite the changes in residence pattern, reduced enrollments, and rising costs.

Clearly the policy of the State should be to support only those programs that comply with the desired program. Exceptions should be made only where sparsity of population requires the operation of inefficient units.

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⁵⁰Statewide Study of Education, Education in North Dakota, 1965-66, <u>op. cit</u>.

⁵¹U.S. Bureau of the Census, <u>U.S. Census of Population: 1960, Vol. 1,</u> <u>Characteristics of the Population, Part 36, North Dakota</u>, (Washington, D.C.: U.S. Government Printing Office, 1963).

CHAPTER III

A FUTURE STATUS

A future status of education serves two important purposes. One, it is an idealized referent or externally developed criterion with which to assess the present education system--i.e., its effectiveness and efficiency. Two, it establishes goals for the organization. The establishment of goals for an educational organization provides orientation by depicting a future status which the organization strives to realize. Thus, they set down guidelines for organizational activity.

Lack of long range guidelines can result in educational policies being shaped by short range goals. In the formulation of educational policies state legislatures are frequently subjected to many partisan forces and pressures. A measure to reduce or minimize the effects of partisan forces is for the State to develop an overall plan of education. Such an effort is likely to bring some order into decision making about education, which is now recognized as a pivotal function of a society.

The aim of education in a democratic society is to provide the best education po-sible for every child. The purpose of this section of the study is to present a set of externally developed criteria as a level of desired standards. The criteria are developed in school district organizations, finances, personnel, and the instructional program.

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Education for All

"The order given by the American people to the schools is grand in its simplicity; in addition to intellectural achievement, foster morality, happiness, and useful ability, the talent of each child is to be sought out and developed to the fullest. Each weakness is to be studied and, so far as possible, corrected. This is truly majestic ideal, and an astonishing new one. Schools of that kind have never been provided for more than a small fraction of mankind."¹

The general belief of the American public, as reflected in the above statement, requires a system designed to meet the individual needs of all students. Differences among and within individuals make it necessary to differentiate the instruction.

Essential Objectives of Education

The educational program of a democratic society requires that it be child-centered. The school must provide a program with educational objectives that aim at the full development of all aspects of the learner.

Educational objectives must take into account the nature of the learner and the nature of the world with which he must interact. Tyler concluded th that the essential objectives of education are necessarily derived from (1) what we know about the psychology of the learner, (2) what we know about the nature of his society, and (3) what we know about the content, structure, and

¹The Committee for the White House Conference on Education, 1953, <u>A</u> <u>Report to the President</u>, (Washington, D.C.: Government Printing Office, 1953), p. 2.

form of knowledge important to the individual for providing an effective interaction with his world.²

The Nature of the Learner. Modern education supports the contention that the pupil is a self directive individual who is motivated by inner drives to become a more complete self, to learn what can become meaningful to him. The drives, or motivations, are the focal point of teaching. Stimulating instruction lies in the energizing of these drives and in keeping it alive, free, and developing.³

A child typically passes through specific stages in intellectual development.⁴ Children reveal certain developmental stages that generally identify "readiness" levels of learning. The implication of this finding, according to many educators, is that in the desired educational setting the level of learning materials and tasks will be selected and made available to the child when he is "ready" for them. This is to suggest that children should not be categorized by age alone for learning experiences as is done in age-grade classroom systems.

Reward or reinforcement is a requisite for all learning. Thorndike concluded from experiments that reward, such as teacher approval in the classroom, was indeed essential in the learning situation.⁵

²Ralph W. Tyler, <u>Basic Principles of Curriculum and Instruction</u>, (Chicago: The University of Chicago Press, 1950), p. 3.

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³National Education Association, <u>Schools for the Sixties</u>, A Report of the Project on Instruction to the National Education Association (New York: McGraw-Hill).

⁴Jean Piaget, <u>The Growth of Logical Thinking from Childhood to Adole-</u> <u>scence</u>, (New York: Basic Books, 1958).

⁵E. L. Thorndike, <u>The Principles of Teaching Based on Psychology</u>, (New York: A. G. Seiler, 1906) pp. 51-54.

Pearson found that behind the mastery of a task is the need for proving one's self and winning the approval of others in almost every normal case.⁶ If this is the case that motives for learning reside in the interpersonal relationships, it is important for schools to employ classroom teachers who are perceived by pupils as capable and enthusiastic, and are well trained in the development of children.

Symonds summarized these findings and concluded that the ideal learning setting is realized when pupils are presented with learning opportunity in the form of materials and tasks (1) for which they are ready, (2) when they are rewarded for making appropriate responses, and (3) when they are meeting the expectations of their teacher and their expectations for them-selves.⁷

Underlying all of these research findings is the fact that the learner develops within his own rate and directions. It would appear reasonable to conclude, therefore, that whatever the system of classification and promotion of pupils, the appropriate means for adapting instruction is on an individual basis.

The Nature of Society. Change is becoming a style of life. Today, for example, nearly a million people are engaged in employment in this country to find out something new.⁸ New Products, new techniques, and greater scientific knowledge are being produced at accelerating rates.

⁶C.H.J. Pearson, <u>Psychoanalysis and the Education of the Child</u>, (New York: W. W. Norton and Company, 1954), pp. 148-50.

Percival Symonds, <u>What Education has to Learn from Psychology</u>, (New York: Teachers College Press, Columbia University, 1955).

⁸ Fortune Editors, <u>The Fabulous Future: America in 1980</u>, (New York: Dutton, 1956), p. 205.

The forces of change are world-wide. Economic growth, population growth and a growing concern about the rights of minority groups and dependent nations are felt around the world. These changes appear to be accelerating and directly effect the lives of the student today.

The idea can no longer be accepted that a person can acquire in his first 18 years all the education he needs for a lifetime. Chamberlain estimates that about half of what we learn will be obsolete in a decade; and about half of what we will need to know ten years from now is not available today.⁹ This is true for both professional people and the rank and file manual workers, he states. No longer can the local school isolate the curriculum within the boundaries of the community, school district, state, or the nation if it wishes to serve the needs of the individual. The Americans are a changing people, Bruner observes; their geographic mobility makes imperative some degree of uniformity among high schools and primary schools. Yet the diversity of American life in general, he adds, makes equally imperative some degree of variety in curricula. Moreover, he continues, schools must also contribute to the social and emotional development of the child, if they are to fulfill their function of education for life in a democratic community and for fruitful family life.¹⁰

Ideally, the educational program must help people find individual satisfaction with their way of life and their place in society. It must assist students to gain knowledge of the world, and to provide an education cognizant of contemporary forces of change.

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⁹Leo M. Chamberlain and Leslie W. Kindred, <u>The Teacher and School</u> Organization, (Englewood Cliffs, New Jersey: Prentice-Hall, 1958).

¹⁰Jerome Bruner, <u>The Process of Education</u>, (Cambridge: Harvard University Press, 1960).

The Nature of Knowledge. The rapid expansion of knowledge since World War II has been the most important single force in educational change. Education in such conditions demands more permanency than the memorization of factual knowledge it demands fundemental understandings of the structure of knowledge, Bruner contends.¹¹ Isolated facts, without a theory to unify them, do not tell us what to expect in new situations and consequently do not de equip the student for success in any but routine situations where other people have already worked out the answers. If a subject matter area is to assume a logical structure, this structure must be understood by the elementary teacher who first introduces the area, as well as by succeeding teachers. The structure of a discipline, its method of inquiry and the style of thinking of its scholars and specialists offer important keys to this educational task, Bruner adds.¹²

Developing structure in generalizations, rules and styles of thought in the elementary and secondary curriculum requires the talents of specialists in academic disciplines to aid the regular classroom teacher. Rapid changes impose great responsibilities on the teacher to keep current with the changes. An educational opportunity of desirable nature should offer a fully trained and upgraded teacher in every classroom. Furthermore, the teacher should be supported by related service personnel and modern instructional aids.

11 <u>Tbid</u>. 12

"Ibid.

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Education's Domain of Responsibility

A central issue of concern of the educational program is what responsibilities should schools identify as their domain.¹³ Or, to state it another way, what should they teach and what other activities should they offer?

Agreement is common on broad issues such as the schools being responsible for preparing youth to live in today's and to shape tomorrow's world. General agreement is also reached on the school's responsibilities toward providing basic communication, computational, and critical thinking skills. Differences usually arise in determining what should be given major attention, and what should not be included. Some support a total program covering a wide range of subjects. Others prefer a restricted program with sharp focus on academic subjects.

Differences are even more accentuated in the areas of the school's responsibilities for the physical, social, and mental health of the child. Some hold that social institutions other than the school are responsible for the child in these areas. Others argue that the mental and physical health needs of the children are not being met by the family or other agencies. If a child is having difficulties in either of these areas, they contend, the school will have little effect in encouraging his intellectual development until they have been resolved.

The answer to the debate usually rests somewhere between the two poles in a shared responsibilities roles, the National Education Association writes, 14

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¹³National Education Association, Schools for the Sixties, <u>op</u>. <u>cit</u>.
¹⁴Thid.

Whenever social agencies fail to meet their social responsibilities, schools have voluntarily accepted the responsibility or have been assigned the responsibility by society. The schools do share in the responsibility for seeing that the total range of educational needs of youth are served, either by the schools or other agencies.

Standards for School District Organization

School district organization can affect the level of quality and efficiency of the educational program. If a State assumes the position it seeks to provide the best education possible for all youth through a system which invests considerable powers in the local school district, the ability of the local school district to provide sufficient funds to meet this goal then becomes very important.

Essential Elements and Limitations

Estimations by Dawson, Ayers, and Cushman indicate that in terms of the conventionally organized elementary school, an enrollment of at least 200 pupils is required to support a full array of educational services.^{15, 16, 17} These estimates are based on a standard eight classroom school with

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¹⁵ Howard A. Dawson, Floyd W. Reeves, et. al., Your School District, A Report to the National Committee on School District Reorganization (Washington: National Education Association, 1948), p. 70.

¹⁶Henry F. Alves, Archibald W. Anderson, and John Fowlkes, <u>Local</u> <u>School Units Project, Local School Unit Organization in Ten States</u>, U.S. Department of the Interior, Office of Education, Bulletin 1938, No. 10, (Washington: Superintendent of Documents, Government Printing Office, 1939, p. 12.

¹⁷M. L. Cushman, "The Ideal School District," <u>Phi Delta Kappa</u>, XXXII (March, 1951), p. 313.

approximately 25 pupils per classroom. To meet such a minimum in sparsely populated rural areas requires transportation of pupils. Transportation of the pupils can determine the limits of service regions in some of the least populated areas.

Educators have tried to determine the maximum amount of time an elementary pupil can be expected to spend riding a bus to and from school. This is a particularly important issue to the sparsely populated areas since it can determine if an area holds the potential for meeting minimum enrollments.

Cushman, Dawson and Reeves, <u>et</u>. <u>al</u>., advise that pupils in grades K-8 ideally should not ride a bus for a one way trip for more than 45 minutes.¹⁸, ¹⁹ Alves estimates that an elementary pupil can ride a bus for one hour to school without affecting his performance.²⁰ The maximum service area of an elementary school is, according to these standards, the distance that the bus system can transport all students to the school within a period of not more than about one hour.

Minimum school enrollments and transportation time limits can determine the service region of the secondary school. Conant estimates that to support a comprehensive secondary education program there should be no less than 100 in the graduating class.²¹ This would suggest a minimum four year enrollment of about 450.

¹⁸<u>Ibid</u>.
¹⁹_{Dawson}, Reeves, <u>et. al.</u>, <u>op. cit</u>.
²⁰Alves, <u>op. cit</u>.
²¹James Conant, <u>op. cit</u>.

Alves feels that a secondary pupil can ride a bus one way for one and a half hours and still perform to the best of his ability in school.²² Dawson, Reeves, <u>et. al.</u>, and Cushman contend that the ideal maximum travel time for secondary pupils is about one hour.^{23, 24}

Estimating School Service Regions

Even though bus riding time limits could be agreed upon and precisely established, it is impossible to accurately describe for all regions of a state how many square miles can be served by a particular school. The number of times a bus must stop for pickups, the conditions of the roads, the weather conditions, and the bus routing system all are major factors in determining how many miles can be covered by a bus system. Obviously an urban school transportation system with many stops cannot cover the same linear miles as a rural system with few stops.

Studies in Alabama in 1951 indicated an average route coverage of 14 miles per hour, ranging from 8 to 40 miles under varying conditions. Timing buses under actual operating conditions is the only way to be sure of how much time is needed for a given distance, but indications are that about 15 miles is the maximum distance which can be covered in an hour. This assumes that a load of 35 or more pupils is accummulated at 15 to 20 stops.²⁵ These figures apply to rural areas only. Sparsely populated areas may make pupil stops infrequent enough to increase the coverage of the system.

²² Alves, <u>op. cit.</u>
²³ Dawson, Reeves, <u>et. al.</u>, <u>op. cit.</u>
²⁴ Cushman, <u>op. cit.</u>

25 E. Glenn Featherston, and D..P. Culp, <u>Pupil Transportation</u>, (New York: Harper and Row, Publishers, 1965). <u>An Elementary School Service Region Model</u>. On the basis of this information, therefore, in sparsely populated rural areas the maximum service region of an elementary school is an area covered by a 15 mile radius. This is estimated on a bus ride limit of close to one hour, and of course, assumes no serious geographical or other physical limitations.

These limits define a service region of 707.14 square miles, and an elementary school age population density of no less than .2828 per square mile. Or, based on a ratio of elementary pupils to the total population, a total population density of 1.6054 persons per square mile.²⁶

²⁶Calculation: Square miles of region = $\frac{22}{7} \times 15^2 = \frac{707.14}{7}$ Minimum elementary pupils in region = $\frac{200}{707.14}$ Elementary pupils per square mile = $\frac{200}{707.14}$ = .2828. Ratio of elementary pupils to total = $\frac{632,446}{75,682}$ = 5.6767 Ill,392 Rural = $\frac{409,738}{75,682}$ = 5.4139 Urban = $\frac{222,708}{35,710}$ = 6.2366 Minimum total population density of region = 5.6767 x .2828: = $\frac{1.6054}{1.6054}$ Rural = 5.4139 x .2828 = 1.5311 Urban = 6.2366 x .2828 = 1.7637
According to this model, an elementary school should (1) enroll no less than 200 pupils, or (2) enroll pupils from an area covered by a 15 mile radius if the minimum enrollment cannot be met within a smaller area.

<u>A Secondary School Service Region Model</u>. By the same calculations, a secondary school is estimated to be an area covered by a 20 mile radius. This is estimated on a bus ride limit of one hour and fifteen minutes, and of course, assumes no serious natural barriers.

These limits define a service region of 1257.14 square miles, and a secondary school age population density of no less than .3580 pupils per square mile. Or, based on a ratio of secondary pupils to the total population, a total population density of 5.0171 persons per square mile.²⁷

A secondary school, according to this model, should (1) enroll no less than 450 pupils, or (2) enroll pupils from within an area covered by a 20 mile radius if the minimum enrollment of 450 pupils cannot be met.

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<sup>27</sup>Calculation:

Square miles of region = \frac{22}{7} \times 20^2 = \frac{1257.14}{7}

Minimum secondary pupils in region = \frac{450}{1257.14}

Secondary pupils per square mile = \frac{450}{1257.14}

Ratio of secondary pupils to total population = \frac{632.446}{45.129}

= \frac{14.0142}{14.0142}

Rural = \frac{409.738}{32.154} = 12.7430

Urban = \frac{222.708}{12.975} = 17.1644

i12.975

Minimum total population density of region = 14.0142 x .3580

= \frac{5.0171}{11}

Rural = 12.7430 x .3580 = 4.5620

Urban = 17.1644 x .3580 = 6.1449
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<u>A School District Organization Model</u>. On the basis of school service region calculations, and on the basis of a desirable ratio of special personnel to pupils, a determination of the minimum size of a desirable school district can be calculated.

Dawson, Reeves, <u>et</u>. <u>al</u>., conclude from their surveys that to be most effective a school district must support a full array of educational services with a staff of from 30 to 40 persons.²⁸ A school district large enough to support such a staff at a cost bearing a reasonable relationship to the total cost of the educational program will need to have an enrollment of 10,000 to 12,000 pupils, they report.

The North Dakota State Department of Public Instruction reports that the ratio of elementary to secondary pupils in the State for the year 1965-66 was 2.3414 elementary pupils to every one secondary pupil. This means that within a school district of 10,000 to 12,000 pupils, there will be approximately 7,007 to 8,408 elementary, and 2,993 to 3,592 secondary pupils.²⁹

28 Dawson, Reeves, et. al., op. cit. 29 Calculation: Ratio of elementary to secondary students = $\frac{102,062}{43,589} = \frac{2.3414}{43,589}$ Percentage of elementary = $\frac{102,062}{145,651} = 70.073$ Percentage of secondary = 100.00 - 70.073 = 29.927Proportion of elementary in ideal = 10,000 = 7007.312,000 = 8408.4Proportion of secondary in ideal = 10,000 = 2992.712,000 = 3591.6

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In conclusion, a school district which can adequately support a desirable educational program meets the following standards:

- 1. Elementary and secondary enrollment of the district should total between 10,000 and 12,000 pupils.
- 2. Elementary schools within the district should:
 - a. Enroll no less than 200 pupils, or
 - b. Serve an area within which any pupil does not have to ride a bus for more than one hour one way. This is an area approximately covered by a 20 mile radius, or a total of 1,257 square miles.
- 3. Secondary schools within the district should:
 - a. Enroll no less than 450 pupils, or
 - b. Serve an area within which any pupil does not have to ride a bus for more than one hour and fifteen minutes one way. This is approximately an area covered by a 20 mile radius, or a total area of 1,257 square miles.

Financial System

The quality and extent of educational opportunity depends on the degree of substemance offered by the sponsoring society. State resources, of course, are limited and sufficiency of funds, therefore, is closely related to the efficiency of their application. Application of the funds once derived is important, and it behooves a state to establish a financial program which will encourage the most effective educational program through the most efficient expenditure of resources. Similarly, the program should discourage inefficient use of state resources. Education is a State, local, and national effort, and as such, it requires the full support of all three in the form of a financial partnership plan. Funds derived by all three organizational units should contribute to the most effective educational opportunity for the youth of the state.

Financial Support and the Educational Program

Desirably, the financial support program first begins with the identification of the educational needs of the State in terms of its stated goals followed by the calculation and derivation of sufficient funds to support such a program. This is not the practice at the present time in most states. Typically the State estimates the funds available to education after considering all needs of the State in light of available revenue from a fixed tax rate. The educational program is then planned within these limitations. If the goal of the State is to offer the best education possible for all youth, educational needs must be calculated in numbers and qualifications of personnel, instructional materials and aids, school plants, transportation facilities, and special educational services required to serve the number of pupils enrolled in the program.

Equitable Support

The needed funds for support of the program is desirably gained through a taxation plan which applies the burden equitably to all sources of real wealth, and in which no specific group of citizens are unduly burdened. The goal of equity in support of the program follows from the fact that education is a function of the State. Property tax has historically been the paramount source of funds for education, and at the time of its establishment it was perhaps the best single measure of true wealth. Today, personal income is

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looked upon as the best single measure of real wealth and, Hirsch states, that it has become the major base for many tax programs.³⁰ Moreover, with the present Federal Government collection system for personal income tax it appears to be the most efficiently administered. Desirably, states could derive a larger portion of revenue from personal income while not totally abandoning property tax as a source of some income.

Not only is it advisable that the means for revenue change but, according to Hirsch, the major role of assessing and collecting tax monies should shift from the local school district to the State.³¹ Over the past 50 years the contributions made to education have not significantly increased more than the increases in personal income. He contributes this low "elasticity" of public education income to the people's attitude toward education and the tax system. He concludes, if the public education is to be improved in the United States and more funds to finance education are to be found, serious consideration must be given to changing both, including further shifts in the responsibility for financing education from the local school district to the State and possibly the Federal Government.³²

It is not the intent of this plan to propose a new tax program. Such a project would require additional study.

Equitable Distribution

Once the funds have been derived their distribution should desirably be

³⁰Werner Hirsch, <u>Spillover of Public Education: Costs and Benefits</u>, (Los Angeles: University of California, 1964).

³¹<u>Ibid</u>. ³²<u>Ibid</u>. -63-

made at the State level. Hirsch writes that clearly the more the expenditures are financed by the State and the more subsidies are based on the equalization principles, the more uniform the availability of funds throughout the State will be.³³ Uniformity does not necessarily mean that all districts received the same amount of payments. It may mean that the State provides more than average aid to the less wealthy sectors, and to support unusual or extraordinary costs of the program. It also requires that expenditure of such resources encourage efficient districts, and, conversely, discourage the inefficient.

Local Administration of Funds

Finally, the appropriation of funds for the education program should be made to the local district for their administration. Moreover, the local district should be allowed to levy taxes against itself beyond the minimum required by the State. Control of expenditure of the funds should be limited to assuring a minimal appropriate educational opportunity for the youth of that district. Local administration provides greater flexibility for program adjustments to local needs. Local districts should have the right to extend a greater effort through additional self-taxation.

Summary

In conclusion, a desirable financial support plan should:

1. Plan support on the basis of the educational goals of the State.

33 <u>Ibid</u>.

- 2. Shift the major responsibility for taxation and distribution of revenue for education from the local school district to the State.
- 3. Distribute funds to encourage efficient and effective districts and discourage the inefficient.
- 4. Distribute funds and adjust payments so that larger contributions are made to the less wealthy or able districts and thereby giving equal educational opportunity.
- 5. Appropriate funds to the local school district for their administration to permit local adaptation of the program.
- 6. Permit the local school districts to levy taxes on their own wealth for the support of programs beyond those identified as minimum.

Personnel

Teachers stand at the most important point in the educational process, and hence the quality of the teacher is the key to quality educational opportunity.³⁴ The best education possible requires in addition to other elements that each child is provided access to fully qualified, carefully selected, and well supervised educational personnel.

Preparation and Selection

The level of preparation of educational personnel today is more important than at any other time in the history of education. The explosion of knowledge, the discovery of new fields of knowledge, and the increasing importance of highly technical fields demands heightened standards of preparation

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³⁴Robert L. Garretson and Ralph L. Pounds, <u>Principles of Modern Educa-</u> tion, (New York: McMillian Co., 1962), p. 29.

of teachers at all levels. In regards to this point Keppel writes, "No wise man will seek entrance to heaven on the argument that it has been absolutely necessary in the past for a man or woman to graduate from a four-year college ...to teach third grade... With the new curricula that seem to be ahead of us, however, college education becomes more necessary."³⁵

The selection or admission of personnel to the profession is controlled through certification. The granting of certificates is a device to control, insofar as possible, the quality of personnel who practice in the schools of the State. These practices must necessarily reflect the desirable levels and must be readily adjustable to the demands of the times. Precise minimum levels of preparation are, of course, difficult to establish, but most educators today feel that because of the increased demands on schools, a teacher at any level should have no less than four years of college preparation. Specific skills required by educational specialists are normally built upon the basic preparation of a four-year degree into fifth-year or graduate degrees depending upon the nature of the tasks to be performed.

Professional Upgrading

The content of education and the tools and materials that teachers must employ today, like other professional fields, are changing rapidly. Obsolescence of educational preparation should be avoided through a program of professional growth. Intolerance toward professional obsolescence for such

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³⁵ Francis Keppel, <u>The Necessary Revolution in American Education</u>, (New York: Harper and Row Publishers, 1966), p. 91.

a large profession as education is best accomplished through provisions requiring periodic renewals of the original certificate upon increased updated requirements.³⁶

Supervision

Adequate preparation does not necessarily assure top performance by a teacher. The combination of experience, preparation, and professional guidance can contribute to the effectiveness of the teacher. Supervision of teachers as professional guidance by fully trained and experienced personnel is a quality control device used as a means to aid the inexperienced or under-prepared teacher to become more effective.

Personnel Team

The array of services called for in a desirable child-centered educational opportunity are complex and numerous. The individual classroom teacher cannot be expected to possess the competencies necessary to cope with the normal routines of the classroom as well as, for instance, the competencies required to handle remediation of special problems. The breadth of the process calls for personnel prepared in many special skills. An education team which could competently provide for most of the educational services in an ideal educational program, according to Dawson, Reeves, <u>et. al.</u>, consists of:

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³⁶ Statewide Study of Education, Educational Personnel in North Dakota Public Schools, <u>op</u>. <u>cit</u>.

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Classroom teachers

Education specialists

-- for the fifted, slow learner, mentally, physically

and emotionally handicapped

-- reading, speech and hearing

Curriculum specialists

-- elementary and secondary

Administrative and supervisory personnel

Special services

-- guidance and counseling

-- health

-- psychological

-- testing-

-- library37
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Personnel Salaries

The attraction and retention of personnel who are well prepared, upgraded, and supervised require assurance of adequate salaries. Security in these terms also refers to reasonable opportunities for professional advancement. Fully trained and experienced teachers are in great demand and comparatively short supply. To attract and retain a competent staff requires, as one factor, a financial effort on the part of the State that would bring benefits up to competitive levels with all sectors of the nation. Of some equal importance is the opportunity to advance professionally within the school system.

Desirable Personnel Plan

A desirable educational opportunity has far reaching implications for the number and kind of teachers and other educational personnel. The availability of fully trained and effective personnel teams to each child,

37 Dawson, Reeves <u>et. al.</u>, <u>op. cit</u>. regardless of his location in the State or mental or physical abilities, is determined to a large extent by the benefits offered to personnel. The present supply of fully competent personnel falls far short of such a demand level, and if a State is to attract and retain a fully competent staff of personnel, the benefits must be adequately high to be competitive.

In summary, the public education policies of the State should be so formulated to ensure that:

- Each child of the State has unimpeded access to a fully trained, carefully selected, well-supervised, upgraded and secure classroom teacher.
- 2. Each classroom teacher is well supported by a qualified team of educational specialists; guidance, special education, physical and mental health personnel, and librarians.
- 3. Levels of professional preparation required for admission to practice and the benefits extended to the personnel will not lag behind the Nation.

Instructional Program

Teachers and pupils must be brought into structural relationships that can best take account of learning goals, the characteristics of pupils as learners, instructional methods, and teachers knowledge and skills.³⁸ Furthermore, the organization of the instructional program must be considerate of staff utilization and effective use of learning media. The structural relationships, according to what we know about the learner, should take into

³⁸Glen Heathers, <u>The Changing American School</u>, John T. Goodland, editor (Chicago: National Study for the Study of Education, 1966), p. 110.

account an instructional program that provides continuous, unbroken learning experiences geared to individual pupil learning patterns. At the secondary level a comprehensive program is important to provide the best education possible for all pupils. Additionally, an effective instructional program utilizes the strengths of the most qualified instructor in each learning experience. To attain and maintain a viable instructional program in a rapidly changing society, the program structure should incorporate advisory groups.

Elementary Organization

Efforts are now being made by educators to adjust the instructional organization pattern to agree with what we know about the learner, his world, and the structure of knowledge. Two major instructional organizational plans have come forth within the last decade which are efforts to focus on the individual. They are the nongraded (or continuous plan) and team teaching. Both are aimed at enhancing the learning process by proposing new solutions to some persistent problems of education, pupil advancement, pupil grouping, scheduling, and teacher deployment.

<u>Nongraded Plan</u>. This plan departs from the conventional grades system of instruction by rejecting the grade-level curriculum, and grade-level placement and promotion, on the assumption that these fail to provide adequately for individual differences among pupils.

The National Education Association describes the plan as follows:

The vertical organization of the school should provide continuous, unbroken, upward progression of all learners, with due recognition of the wide variability among learners in every aspect of their development. The school organization

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should, therefore, provide for differentiated rates and means of progression toward achievement of educational goals.³⁹

Proponents of this plan feel that the graded system holds back the advanced or rapid learner and forces the retarded or slow learner ahead beyond his capacities to learn. Nonpromotion, the device employed to deal with the failure of some pupils to achieve grade standards, is a poor solution, according to Estes and Otto.⁴⁰ Their research shows that it does not accomplish its purpose of fostering pupils' achievement. The nongrading plan assumes that learning effectiveness, motivation to learn, and mental health all will be enhanced if the student's rate of advancement in each curriculum area is geared to his capacities. Nongrading, it is assumed will reduce students' experiences of failure and rejection because the pace is too fast, or of boredom and cheap success because the pace is too slow.

Team Teaching. The most widely accepted definition of team teaching is that of Shaplin's:

Team teaching is a type of instructional organization involving teaching personnel and the students assigned to them in which two or more teachers are given responsibility working together, for all or a significant part of the instruction or the same group of students.⁴¹

⁴⁰M. Estes and Henry J. Otto, Accelerated and Retarded Progress," <u>Encyclopedia of Educational Research</u>, Edited by Chester W. Harris, (New York: MacMillan Co., 1960), pp. 4-11.

⁴¹Judson T. Shaplin, "Description and Definition of Team Teaching," in <u>Team Teaching</u>, edited by Judson T. Shaplin and Henry F. Olds, Jr., (New York: Harper and Row, 1964).

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³⁹John I. Goodlad, <u>Planning and Organizing for Teaching</u>, Project on the Instructional Program of the Public Schools (Washington, D.C.: National Education Association, 1963).

Goodland and Rehage would add the requirements that team teaching must involve cooperation among team members in planning, conducting, and evaluating instruction.⁴²

The pupil group in team teaching normally is two or more times larger than the conventional class group. Most elementary school teams teach all the pupils of one grade level, or of two or three adjacent grade levels, and encompass all areas of the curriculum. Secondary school teams most often involve either one curriculum area or two related areas.

Proponents of team teaching point out that one of its strong points is flexibility in grouping, in scheduling and in the uses made of space and equipment.⁴³

The team teaching plan is essentially interested in providing the student with the best prepared instructor for each subject area.

<u>A Desirable Plan</u>. On the basis of what we know about the nature of the learner, the nature of his world, and the nature of the structure of knowledge, it would appear that a combination of the two instructional plans explained above would be the most advantageous. Features of both plans would enhance the instructional program. The nongraded plan provides the feature of working with children in groups which are similar in achievement level and would tend to reduce the range of instruction needed. The team teaching plan takes advantage of the best prepared and qualified instructor for each subject area.

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⁴² John J. Goodlad and Kenneth Rehage, "Unscrambling the Vocabulary of School Organization," NEA Journal, (March, 1961), pp. 52-54.

⁴³ Heathers, <u>op</u>. <u>cit</u>.

Secondary Organization

At the secondary level a desirable individualized instructional program should provide the student with a set of common educational experiences (general education), and it should also provide the student with the opportunity to develop in those areas which he and professional educators identify as his educational needs and interests. This necessitates the availability of courses for those who might seek to enter the labor market immediately upon graduation from high school, courses for those who intend to go into post-secondary schools and will need preparatory programs, and finally, all students should have the election of selecting some courses of special interest, such as music and art, so Conant claims.⁴⁴

Advisory Personnel

One of the measures that a State can take to maintain quality in the education system is to assume a responsible role in the collection and dissemination of educational information. Changes and additions in the structure of knowledge are rapid today, and it is expected that they will accelerate at higher rates within the next ten to twenty years. There is also accumulating knowledge of child development, improvements in instructional plans, teaching methodology, and the use of technological aids. Both local and national resources for such information should be utilized by a State to maintain contemporary educational programs. Locally, the education, academic, and social science specialists at state universities, colleges, and public

44 Conant, <u>op</u>. <u>cit</u>. -73-

schools provide sources of current information on content, teaching methods, and the nature of society.

Modern Technology and Education

Modern teaching devices and systems are supplements to good teaching. With the advent of programmed instruction, educational television, computers, and learning systems qualified and enthusiastic teachers can immensely increase their effectiveness in the classroom.⁴⁵ A desirable educational plan would therefore advocate the full application of modern technological devices to supplement the fully trained and highly competent personnel planned for the classrooms of the State.

Modern Technology

Modern technology provides a means of extending our capabilities to undefinable limits. The application of modern technological devices to education cannot only improve the quality of the process, but it can also attack some of the more difficult problems of the field. As John L. Burns said, "Today we are seeing the beginning of another forward surge that may prove even greater...(than the) ...greatest forward surge in education...when the first book was printed...⁴⁶ Electronic devices provide us with the ability to record, store, and reproduce so that every classroom in a school district,

⁴⁵Statewide Study of Education, Educational Personnel in North Dakota Public Schools, <u>op</u>. <u>cit</u>.

⁴⁶ John L. Burns, "Our Era of Opportunity," <u>Saturday Review</u>, January 14, 1967, p. 38.

State, or the nation could gain access to a master teacher. Technology is the media through which the world can be brought to the classroom.

Some contend that efforts to improve the quality of educational experiences through the use of electronic devices may stimulate progress toward two other goals--extending the base to reach more people while lowering or holding the line on unit costs.

Education Television. The Federal Communications Commission reports that there are close to 200 educational television stations in operation in this country. The majority of the programs are designed for elementary and secondary school use.⁴⁷

The essential principle for use of educational television in education is to make it possible for the most competent teachers to reach more pupils. It has been found to its advantage that it normally requires the teacher who steps before the camera to be better prepared than most classroom situations. This media also provides the means for offering more courses for small secondary and elementary schools. The small high school of less than 100 pupils, for example, can offer subjects such as modern mathematics, advanced chemistry, art, music, a host of foreign languages, which would otherwise be difficult to offer with limited faculty. Educational television can bring the pupils the resources of museums, art gallaries, libraries, prominent artists and musicians, and industrial plants. It can bring national and world events live to the classroom.

In summary, television can capitalize on the competency of a limited number of master teachers and wast resources.

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⁴⁷ Frank K. Kelley, <u>U.S. Federal Communications Commission</u>, (Santa Barbara, California: Center for the Study of Democratic Institutions, 1960).

<u>Programmed Instruction</u>. Programmed instruction is a relatively new concept in educational technology. For purposes of this study the term programmed instruction shall mean prepackaged learning material, the process of application, and the devices used to assist in the process.

The major advantage to programmed instruction is the ability to assist in individualizing instruction. It also aids in developing sequence in the curriculum, defining the objectives in behavioral terms, and requires constant re-examination of the subject matter. It is also a potent instrument in supplementing what otherwise might be a very limited offering of a small high school.

<u>Computers and Data Processing</u>. Computers and data processing equipment has been employed in instructional, administrative, and research work in education. For purposes of this study the description will be limited to its application in the field of instruction. However, the fact that all data about pupils in a school system can be processed and studied and made available instantly to teachers through the use of the computer, is not an inconsequential matter. Serving up information about students on demand by the teacher provides a basis for individual attention.

The greatest contribution of the computer to education is that it can be used as an auto-instructional device for adapting instruction to individual differences and it also has the potential for handling pupils of varied learning rates, and even varied learning approaches or styles.⁴⁸

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⁴⁸ Patrick Suppes, "The Computer and Exce-lence," <u>Saturday Review</u>, January 14, 1967, p. 46.

Suppes states that computer-assisted instruction is possible with only one console per classroom which would be shared by many students during the school day.⁴⁹ A student station, or computer console, is connected by a telephone line to a central computer. The console consists of a typewriter keyboard that permits the student to "talk" with the computer and a television screen that can display written messages as well as drawings, equations, and other graphic materials, Suppes reports.⁵⁰ A "lightpen" can permit a student to select answers to problems shown on the screen. The computer can talk to the student through a pair of earphones or a loudspeaker. For most activities, one large computer can handle many students on a "time-share" basis.

Learning Systems. The most sophisticated concept in instructional technology is the integrated educational system, a total communication system. Total systems of teaching, data storage, retrieval, processing and research are being conceptualized at this time. Models of integrated systems have been developed that combine the computer with many media now in use such as television, films, slides and tape recorders.⁵¹ A systems approach refers to the combination of objectives, learning process, content, and methods of presentation into a system of instruction.

⁴⁹<u>Tbid</u>. ⁵⁰<u>Ibid</u>. ⁵¹<u>Ibid</u>. -77-

CHAPTER IV

A PLAN OF ACTION FOR NORTH DAKOTA

Introduction

A plan of educational development for North Dakota is presented in this chapter. It is intended to present a plan:

- 1. That is based upon observation and diagnosis in Chapter II, and desired future status in Chapter III.
- 2. That is designed to resolve basic problems within a reasonable period of time. Fourteen years is the development period chosen.
- 3. That rests on assumptions derived from the diagnosis in Chapter II. They are:
 - A. One pattern of organization will provide the necessary services for 90 percent of the students. A 3-echelon pattern of:
 - a. Local districts to provide general instructional services.
 - b. Intermediate districts to share with local districts those services the local district is unable to provide.
 - c. A State system which will extend extraordinary services
 for 90 percent of the students is also an appropriate
 vehicle to reach the isolated 10 percent.
 - B. Twelve grade districts that enroll no fewer than 150 to 200 pupils in the high school can produce a more effective and efficient educational opportunity for their children and youth.

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- C. Intermediate districts that are created for shared services for 90 percent of the students is also an appropriate vehicle to reach the isolated 10 percent.
- D. The State expenditures for education will increase up to 15.8 percent by 1980. (All estimates of expenditures are based on 1965 value of the dollar.)
- E. The pattern of financial support can be dramatically altered to show a shift in State effort from the present 22.5 percent of support to close to 70 percent by 1980.
- F. Large numbers of present classroom teachers can be induced to upgrade their professional preparation through salary increments and possible professional advancement.
- G. Additional preparation of personnel will increase their effectiveness in the classroom.
- H. Attract and retain a higher rate of fully qualified personnel through salary increments and improved working conditions resulting from school reorganization.
- I. Given school reorganization, qualitative improvements in financial support, and more qualified personnel, increasingly better ways to educate children and youth may be introduced.
- J. State Department of Public Instruction, higher education, and local districts will assume cooperative responsibilities appropriate to their interests in the major reforms of the scope and quality of education. More specifically:
 - a. State Department of Public Instruction will develop an appropriate and needed leadership roles in the reforms.

- b. Higher education institutions will undertake necessary personnel development and research.
- c. Local districts will respond favorably to appropriate new inducements for reorganization and program development.

School District Organization

A first major program must be a plan for school district reorganization. A reorganization of schools and school districts is fundamental to a basic and comprehensive improvement of the inefficient and ineffective education system of North Dakota. The plan requires a series of simultaneous and coordinated actions:

- Establish eight intermediate districts as service organizations to the constituent local districts. One possible plan is presented below. The functions of the intermediate school districts should include:
 - A. To provide a shared service of personnel and instructional materials to schools and districts unable to individually support special services.
 - B. To supervise the reorganization of school districts within the area.
 - C. Provide leadership and coordination of local and regional planning.
 - D. Provide centers for cooperative planning of school facilities and transportation.
- 2. Organize operating districts around the present 74 twelve grade districts which have enrollments of 150 or more in the upper four grades.

- 3. Attach all nonoperating school districts to 12 grade districts of the size indicated on the previous page.
- 4. Organize elementary schools within districts so as to enroll 200 pupils (eight grade-levels), or serve an area covered by a 15 mile radius.
- 5. Organize high schools so as to enroll no less than 150 to 200 pupils (upper four grades), or serve an area covered by a 20 mile radius.

Justification for Plan. School district organization is a key factor in the development of an efficient and effective educational program. School district boundaries can be drawn too small and thereby limit taxable resources. The smaller and financially less capable school districts in North Dakota offer narrow programs and are staffed with underprepared personnel.¹

The standards for the most effective and efficient school district organization pattern have been outlined in Chapter III of this study. The conclusions drawn from the reported studies indicate that school districts that are large enough to provide the desired program meet the following physical characteristics:

- 1. Offer at least a first through 12th grade program.
- 2. The total enrollment of the district is between ten and twelve thousand pupils.

To apply these standards to North Dakota would mean there would be close to 12 to 14 school districts, as compared to the present 601.² A plan based

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<sup>1</sup>Statewide Study of Education, <u>op</u>. <u>cit</u>.
<sup>2</sup>Calculation:
Enrollment = 147,500
Recommended school district enrollment = 10,000 to 12,000
Proposed districts: <u>147,500</u> = 12 to 14 units
10,000 to 12,000
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on the projected enrollments for 1980 for such a district plan is outlined in Map I. In the example, county lines are used to identify the location of districts. This practice is not necessarily advocated but is employed here as a matter of convenience for further calculations.

Note that in the south-west section of the State one district covers 13 counties. Cushman writes that an ideal school district is one which serves and is controlled by a natural sociological community.³ The size of this organization fails to comply with Cushman's standard. Moreover, the admin-istration of such an expansive unit would be difficult if not unfeasible.

Dawson, Reeves, <u>et</u>. <u>al</u>., indicate that where such a standard cannot be achieved within reasonably sized areas, the support of some educational services are best centralized and shared.⁴ The practice of centralizing and sharing of services is not uncommon. Intermediate school districts have been established and administered in certain states for this purpose. The intermediate district is established generally as a service organization for the constituent school districts of the area. The organization structure in those states employing intermediate districts organized in a 3-echelon system; local districts, intermediate districts, and the state.

It is proposed here that since the districts over areas larger than "sociological communities" they become the general guidelines for North Dakota intermediate districts. Enrollment of the proposed intermediate districts and city districts for the year 1980 are reported in Appendix Table J.

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³Cushman, <u>op</u>. <u>cit</u>.

Dawson, Reeves, et. <u>al</u>, op. cit.





Roman Numeral Designates Intermediate District Map Outline from U.S. Bureau of the Census What school district plan is best for North Dakota conditions? A recent study by the Statewide Study of Education cited previously reported that 90 percent of the secondary pupils of the State were within 20 miles of one of the 74 existing high schools with enrollments of at least 150 pupils. This complies with the distance prescribed as the recommended maximum school bus ride for the secondary pupils. Centralizing school districts in localities which already have high schools of 150 would accomplish:

- 1. Adjusting the organization to the present residence pattern of the State.
- 2. Retaining local control of the districts within identified community boundaries.
- 3. The enrollment in the 204 small districts which would be eliminated would add to the present enrollments of those with 150 and increase their educational services potential.

To complete the reorganization, the plans calls for two additional modifications. They are:

- 1. The reorganization of the State system into eight intermediate districts and 74 twelve grade districts must be accompanied by a reorganization program within the districts. School districts must reorganize into:
- A. Elementary school of no less than 200 pupils (eight grades), or serve an area covered by a 15 mile radius.
- B. Secondary schools of no less than 150 to 200 pupils (upper four grades), or serve an area covered by a 20 mile radius.
- 2. Attach all elementary and nonoperating districts to high school districts. This action would succeed in meeting the criteria of such district offering and supporting a one through twelve grade program.

If the pupils in the small high schools were to distribute themselves in the same proportion that now exists in the 74 districts of 150 or more secondary pupils, the proposed school district profile would appear as in Table 4.13.

		Pupils F	Percent of Total	
Type of District	Number	Elementary	Secondary	Enrollment
12 Grade Districts				
Large Medium Small	13 54 7	55,884 38,349 10,470	21,315 17,188 4,278	52.5 37.5 10.0
TOTAL	74	104,703	42,781	100

TABLE 4.13--ENROLLMENTS BY TYPE OF DISTRICT IN PROPOSED PLAN: 1980

Personnel

A corps of fully qualified teachers and supporting personnel is essential to the education process of the system. High priority should be assigned to the task of creating that corps. The plan calls for:

- 1. A fully qualified teacher for each child by 1975.
- 2. Administrative and instructional related services for all schools through more efficient deployment of personnel by the year 1980.
- 3. Increasing the qualified teachers salary equal to the national average of \$6,293 (1965 dollars) by 1975.
- 4. Administrative and service personnel salary increased to at least \$7,000 by 1975.

- 5. A masters degree as the minimum requirement for administration or service by the year 1970 at both the elementary and secondary levels.
- 6. All elementary classrooms on a standard of one teacher to every 27 pupils by 1980.
- 7. All secondary pupil teacher averages at one teacher to every 25 pupils by 1980.
- 8. Abolishing the permanent certificate for all levels of preparation and experience and establish a plan similar to the one outlined in this study.
- 9. Organizing a plan with the universities and colleges of the State to immediately institute special upgrading programs for underprepared personnel.

Justification for Plan. On the basis that the aim of the State is to provide an equal and appropriate opportunity, it should be the objective of the State to:

- 1. Provide a fully qualified teacher for each child.
- Provide support for instructional related services, e.g., supervisors and librarians.
- 3. Establish professional preparation requirements sufficiently high so as not to lag behind other states of the Nation.
- 4. To attain and maintain fully trained personnel, the State must establish professional benefits at a level sufficiently high so as not to lag behind other states of the Nation.

Personnel Needs

The determination of personnel needs are closely tied to the number of

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pupils to be enrolled in the schools. Libera has estimated and projected the number of elementary and secondary pupils to be enrolled in public schools from 1965-66 through 1980-81.⁵ These data are reported in Table 4.14.

Year	Elementary	Secondary	Total
1965	102.062	43,589	145.651
1966	102,409	44.031	146.440
1967	102.291	44,423	146.714
1968	100,518	44.987	145,505
1969	99,520	45.463	144.983
1970	97,780	45,151	142,931
1975	95,425	43,872	139,297
1980	102,238	40,832	143,070

TABLE 4.14--NORTH DAKOTA PUBLIC SCHOOL ENROLLMENT PROJECTIONS: 1965-80

Source: Charles Libera, <u>Estimations and Projections of North Dakota</u> School Population: 1965-80.

On the basis of these data the approximate number and classifications of personnel needed for the proposed plan can be calculated. The ratios of pupils to all categories of personnel used in the calculation were determined to be a desirable arrangement.⁶ These calculations are reported in Table 4.15.

⁶American Association of School Administrators, <u>op</u>. <u>cit</u>.

⁵Charles Libera, <u>Estimations and Projections of North Dakota School</u> <u>Population: 1965-80</u>, A Report Prepared for the Statewide Study of Education (Grand Forks, North Dakota: University of North Dakota, 1967).

1980	
STATUS:	
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SECONDARY	-intendente
AND	Terris
ELEMENTARY	U.
.15ESTIMATED	
TABLE 1	

			VUDV UL LOUND					
Level	Pupils	Teachers	Principals and	Assistants	Librarians	Counselors	Supervisors	Total
Elem.	102,238	2,786	511	0/1	170	170	1,022	5,659
Sec.	40,832	1 ,633	06	24	60	90	720	2,647
TOTAL	143,070	5,419	601	24	260	260	1,742	8,306

RATIOS OF PUPILS TO PERSONNEL EMPLOYED IN CALCULATIONS:

- 25-1	- 450-1	s - 2/District	- 450-1	- 450-1	- 450-8
Teachers	Principals	Superintendent	Librarians	Counselors	Supervisors
Secondary:					
Teachers - 27-1	Principals - 200-1	Librarians - 600-1	Counselors - 600-1	Supervisors - 100-1	
Elementary:					

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The personnel needs of the desired program outlined in Table 4.15 calls for a total of 8,306 as compared to the present number of 7,738. It is the intent of this plan to improve the educational opportunity within existing resources. Therefore, a calculation of the deployment of present personnel based on the reorganization plan and the 1965-66 enrollments are outlined in Table 4.16 The number of personnel are calculated within present resources to demonstrate more effective use of the present supply. These data shall be used in subsequent calculations of salaries and costs of operation.

Level	Pupils	Total Personnel	Teachers	Administration and Service Personnel	Needed Teachers#	Admin. and Service
Elem.	102,062	4,631	4,542	89	3,780	851
Sec.	43,589	3,107	2,465	642	1,744	1,363
TOTAL	145,651	7,738	7,007	731	5,524	2,214

TABLE 4.16-PROPOSED PERSONNEL DEPLOYMENT

*Needed teachers estimated on 1 elementary teacher to every 27 pupils, and 1 secondary teacher to every 25 pupils.

Present and Estimated Supply, Demand, and Gap

The difference between the annual turnover of 20 percent and projected supply provides a calculation of the gap, or deficiency, in numbers of personnel needed.

North Dakota will have an adequate supply of personnel through 1980. However, a deficit of elementary personnel will develop after the year 1970. On the other hand, there will be a growing over supply in secondary personnel through 1980. These data are reported in Appendix Table H.

Personnel Qualification Objectives

Using the national average of level of preparation as an achievable objective to be attained by the year 1970, an estimate of the needed elementary teachers with bachelors degrees can be calculated. Present trends in personnel improvement in preparation are accounted for in the calculations. It is estimated that by 1970, 94.1 percent of the Nation's elementary teachers will have four-year degrees while only 65.8 percent of North Dakota teachers will have attained the same level of preparation. Calculations are reported in Table 4.17.

Year	Estimate	Proposed Plan	Difference	Number of Degree Personnel Needed Based on Difference
1066	ho 8	lio 8		
1900	40.0	40.0	-	-
1967	47.3	54.1	6.8	305
1968	52.8	67.4	14.6	635
1969	59.3	80.7	21.4	910
1970	65.8	94.1	28.3	1,167

TABLE 4.17--ESTIMATED ELEMENTARY DEGREE HOLDERS: 1966-70 (In Percent)

Source: Selected Descriptive data of North Dakota Public School Personnel.

An estimation in levels of preparation for the State's administration and special service personnel can also be projected. It is considered a feasible objective that administrators and service personnel should have at least a masters degree by 1975. The number needed and so qualified is considered the difference between the proposed numbers of personnel to be reassigned to administration and service, and the present number of masters degree personnel employed. These estimations are reported in Table 4.18.
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Year	Estimated Administrative and Special Service Personnel*	Projected Trends of Masters	Needed Masters	
1966	731	150	581	
1967	830	132	698	
1968	930	117	813	
1969	1,030	103	927	
1970	1,130	91	1,049	
1975	1,630	81	1,549	
1980	2,214	72	2,142	

TABLE 4.18--ESTIMATED MASTERS DEGREE HOLDERS: 1966-80

*Estimated Administrative and Special Service Personnel based on an increase of approximately 100 per year through reorganization and reduced need for teachers.

Two ways to reach these desired levels of preparation are open to the State. They are:

1. Attract and retain a higher proportion of fully qualified personnel. Only 40 percent of those now prepared in North Dakota institutions enter the North Dakota public school system. There appears to be a declining percentage of new teachers entering the system.⁷ Furthermore, there is a steady increasing loss of the most qualified.⁸ Increased attraction and retention would likely require increased

7 Statewide Study of Education, Education Personnel in North Dakota Public Schools, op. <u>cit</u>.

professional benefits, such as salaries and professional advancement. A specific plan of action in this area is proposed later.

2. Improve the qualification of existing personnel corps.

Improving Qualifications of Present Personnel

A plan to upgrade a large number of personnel presently in the field requires an unusual approach for several reasons:

- 1. The large numbers to be upgraded and the short period of time in which to do it.
- 2. The nature of needed program content for the experienced teacher.
- 3. The financial burden to provide the program.
- 4. The replacements of loses of personnel to districts whose teachers return to school full-time.

One plan that might meet the demands of upgrading large numbers of personnel in a short period of time is outlined below:

- 1. Establish special centers or colleges at the State universities and colleges designed specifically for this task.
- The special programs would integrate contributory functions of the several units of the college or university; liberal arts, education, behavioral sciences, and instructional media.
- 3. Construct programs specifically for those teachers who return to complete their degrees.
- 4. Secure agreements with cooperating school districts to send their teachers to the college who have less than degree at regular salary for the period of time necessary to complete the program.

- 5. School districts which send their underprepared teachers to college are to be provided with a fully qualified instructor financially supported by the State Department of Public Instruction. A team of such teachers could be organized from current graduating students and employed at a salary close to the present national average of \$6,293.
- 6. When the school district teachers have earned their degrees and returned to the district, their substitute moves on to another location.
- 7. The major portion of additional expenses might be provided through Federal Government education funds.
- 8. The number of teachers involved, the traveling teams, and the special college concept could be expanded annually to include new participating districts.
- 9. Expansion of the graduate upgrading program should follow closely after the undergraduate program.

Certification Plan

Important in the improvement of levels of qualifications, the teachers believe, is to establish certification regulations requiring additional preparation. The present life certificate eliminates the need to improve. A plan which would provide the stimulus for teachers to continue to grow professionally is outlined below.

- 1. Eliminate life certificates at all levels regardless of professional preparation.
- 2. Establish a program similar to the outline on the next page for the renewal of certificates:

Level of Preparation	Time Valid	Renewal Requirements		
Less than 90 semester hours of college work	two years	Earn eight semester (12 quarter) hours of college credit		
More than 90 semester hours but less than Bachelors degree	two years	(same as above)		
Bachelors degree but less than a Masters	five years	(same as above or equivalent in pro- fessional in-service preparation)		
Masters degree	five years	Statement of satis- factory performance by superintendent. If applicant has not taught for 5 years, 8 semester hours of college credit required		

Salaries for Personnel and Projected Costs

The present average salary paid to school teachers in North Dakota is far below the national average.⁹ Teachers who have left the State to teach elsewhere indicate low salaries as the main reason. Increases in salaries up to the national averages for the most qualified may aid in the retantion of these personnel. Moderate overall expenditures for education would be necessary to accommodate these increases. The average salary earned by the nation's public school teachers is \$6,293.¹⁰

⁹National Education Association, Rankings of the States, 1966, <u>op</u>. <u>cit</u>. 10 <u>Ibid</u>. A calculation of the cost to the State to increase teacher's salaries to the level of the national average is outlined in Table 4.19. The estimation is projected through the development period on the basis of present personnel and a progressive reassignment of teachers to administration and service rates on the new pupil teacher ratios. It is also based on the estimations that by 1970 at least 94 percent of the elementary teachers will have degrees and thereby equal the national average. It is assumed that shortly thereafter all elementary teachers will have degrees. Other personnel, their salaries, and resultant costs can be calculated. It is assumed the minimum preparation by 1980 should be a masters degree for administrators and service personnel, and the average expenditure for salaries shall increase to about \$7,000. (All calculations are based on the 1965 value of the dollar.) These data are reported in Table 4.19.

Year		Teache	ers	Other Personnel						
	Numbers ¹	Average Salary	Cost	Number ²	Average Salary	Cost	Total Cost			
1966	7007	5,029	35,245,000	731	5,897	4,309,976	39,555,000			
1967 1968	6900 6800	5,100 5,832	35,645,400 39,657,600	830 930	5,971 6,045	4, 955,930 5,621,850	40,001, 330 45,279, 450			
1969	6700 6600	6,022	40,347,400	1030	6,119 6 193	6,302,570	46,649,970			
1910	0000	0,209	40,919,400			•,,,,,,,,,,,,,				
1975	6100	6,293	38,387,300	1630	6,5563	10,697,690	49,084, 990			
1980	5524	6293	34,762,500	2214	7,000	15,498,000	50,260,500			

TABLE 4.19--ESTIMATED COSTS OF PROFESSIONAL SALARIES: 1966-80

¹Number of teachers based on ratio of one elementary teacher to 27 pupils, and one secondary teacher to 25 pupils.

²Determined by difference between needed teachers and present number of personnel.

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Financial Support Plan

Elements of a plan to improve public education in North Dakota are here translated into financial needs. General Fund estimates are provided for major program elements; these are projected through the development period of 1966-80. As a result of these calculations, it is possible to illustrate (1) the total expenditure that might be needed to support education during this period, and (2) the pattern of expenditure that will be required to develop a potentially effective and efficient education system in North Dakota.

To effectively implement and support the plan of action two major decisions must be made. They are:

- 1. To increase the expenditures for education.
- 2. To alter the present pattern of support.

Specifically, the plan would be effectively implemented by the following actions:

- 1. Increase in State expenditures to cover the proposed increases in personnel salaries.
- Progressive reduction of local effort to 12.5 percent by 1980.
 Local effort is to be determined by a deductible millage in the range of 15 mills.
- 3. Progressive increases in State effort to 70 percent by 1980. This would likely require transfer of major portions of taxable resources from property to income, sales, and business.
- 4. State collection of all funds for redistribution on an equitable basis. The per pupil payments by 1980 should be about \$535.00 to meet the estimated cost of the plan for North Dakota.

Justification for Proposals

In the ideal setting, educational goals of the State determine the extent of sustemance given the education system by the sponsoring society. Educational goals are first determined and then transposed into financial needs. In North Dakota, as in other states, there are limited resources and, consequently, goals must be adjusted to achievable objectives. It is the intent of this section to outline a plan of support for North Dakota established on the educational needs of the State and available and foreseeable resources. Educational needs are shaped by several factors:

- 1. Educational services desired.
- 2. The length of the development period.
- 3. Estimated school enrollments for the period.
- 4. Major sources of revenue.

Educational Services Desired. For purposes of this study one measure of educational services is the equivalent to a calculation of the number of fully qualified personnel needed to provide the desired program. The educational needs of the State in terms of numbers of fully qualified personnel within present supply limits were calculated previously in this chapter. Financial needs of the State through the development period can be calculated from these data.

It is assumed for calculation purposes that expenditures for categories other salaries will remain the same as for the year 1965-66. Therefore, estimated personnel salaries, plus present expenditures can provide an estimate of total State expenditures for education. The estimated salaries, general fund expenditures, and total State expenditures for the development period are summarized in Table 4.20.

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Year	Salaries	Other General Fund Expenditures	Total General Fund Expenditures	Percent Over 1966
1966 1967 1968 1969 1970	39,555,000 40,601,330 45,279,450 46,649,970 47,977,490	27,945,000 27,945,000 27,945,000 27,945,000 27,945,000	67,500,000 68,546,330 73,224,450 74,594,970 75,922,490	2.0 8.5 10.5 12.5
1975	49,084,990	27,945,000	77,029,990	14.1
1980	50,260,500	27,945,000	78,205,500	15.8

TABLE 4.20--ESTIMATED GENERAL FUND EXPENDITURES: 1966-80

Based on the position that expenditures of all funds will remain the same as in 1965-66, a calculation of the average expenditure per pupil for each category can be made. These calculations are outlined in Table 4.21.

TABLE 4.21--PRESENT AND ESTIMATED GENERAL FUND EXPENDITURE BY CATEGORY: 1965 AND 1980 (In Percent)

Category 19	66 Expenditures*	Estimated 1980 Expenditures
Administrative Services	3.72	29.4
Instructional Services	65.43	44.5
Attendance Services	.10	.1
Plant Operation	9.63	8.3
Plant Maintenance	2.40	2.1
Fixed Charges	4.38	3.8
Health Services	.20	.1
Sub Total	85.56	87.56
Food Service	• յեյե	.4
Student Services	.22	.2
Transportation Services	8.10	7.0
Bus Purchases	.87	.8
Capital Costs	4.59	4.0
Debt Retirement	.22	.2
Sub Total	14.44	12.44
Per Pupil Expenditure	457.62	530.20

Source: Statewide Study of Education, Financially Public Education in North Dakota.

Sources of Revenue. The State education system is supported from four major sources: the local school district, county, State, and Federal Governments. The largest contribution is made by the local school district at 52.3 percent of the total expenditure and followed by the State government at 22.5 percent. The major resource of funds for the local, county, and State support is property tax. It is proposed in this Plan to transfer the major responsibility for collection and redistribution of revenues for education from the local school district to the State. This is designed to produce a more equitable support and distribution of education funds. The local school district will also be relieved of the larger burden of support.through property tax, permitting them more freedom to determine local effort.

The plan proposes that the present level of support of the local school district and county be reduced gradually to about 12 percent of the total effort by the year 1980. The proportions of support by each source for this plan are listed in Table 4.22. The percent of support estimated for the Federal Government is based on the average percentage of increase per year of the national state average increase over the seven year period of 1957 to 1965.¹¹ The assumption is made that the percentage of increase of support by the Federal Government will at least equal the previous seven year average. These date and calculations are reported in Table 4.23.

To tax more equitably the real wealth of the State, it is proposed that the State government shift the sources of revenue from property tax to sales, personal income, and business taxes.

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¹¹ National Education Association, Rankings of the States, 1966, <u>op</u>. <u>cit</u>.

	Local		County		State		Federal		Total	
Year	þ	\$	g,	\$	%	\$	%	\$	ą,	\$
1966 1967 1968 1969 1970	52.3 49.1 45.2 41.7 38.4	300.59 284.89 269.19 253.49 237.79	18.1 17.9 17.5 17.1 16.8	104.06 104.06 104.06 104.06 104.06	22.5 26.2 29.5 32.7 35.8	129.04 152.24 175.44 198.64 221.84	7.1 6.7 7.9 8.5 9.1	40.79 38.93 46.75 51.53 56.13	100.00 100.00 100.00 100.00 100.00	574.48 580.12 595.44 607.72 619.82
1975	25.1	159.29	-		62.0	392.75	12.9	81.86	100.00	633.90
1980	12.5	80.75	-	-	70.0	454.19	17.5	113.12	100.00	648.06

TABLE 4.22--PROPOSED SOURCES OF TOTAL SUPPORT: 1966-1980 (In Dollars/Pupil)

NOTE: Unit costs for all years based on 1965-66 enrollment = 147,500.

TABLE 4.23--APPROXIMATE TAXABLE VALUATIONS OF PROPOSED INTERMEDIATE AND CITY SCHOOL DISTRICTS: 1980 (In 1965-66 Dollars)

District	Assessed Valuations	Valuations Per Pupil	Deductable Millage	Intermediate District Contribution
I	34.218.000	408.62	22.0	752,796
II	100,147,000	533.29	22.0	2.203.234
III	47.885.000	372,90	22.0	1,053,470
IV	59,659,000	439.54	22.0	1.312.498
V	76.015.000	447.83	22.0	1,672,330
VI	68,860,000	511.78	22.0	1.514.920
VII	55,448,000	467.59	22.0	1,219,856
VIII	71,789,000	510.26	22.0	1,579,558
Minot	4,583,000	48.68	22.0	100.826
Bismark	4,072,000	63.00	22.0	89,584
Grand Forks	7,567,000	82.11	22.0	166.477
Fargo Area	11,204,000	89.12	22.0	246,488
TOTAL	\$541,447,000	\$367.08	22.0	\$11,911,834

Source: Assessed valuations obtained from Statewide Study of Education, Selected descriptive data on North Dakota, Public School Personnel.

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Equitable Local Effort. School district organization plans based on geographic and demographic factors result in differences in the local district ability to support education. The proposed school districts outlined here are no exception to this problem. Despite attempts made to equate student load in all districts, the value of the property within the district varies widely. The per pupil valuations of property of the eight proposed intermediate districts and four city districts vary from \$48.00 to \$533.00. These data for the year 1980 are summarized in Table 4.23.

Equitable local effort is proposed by the application of a statewide deductible millage on all real property of 15 mills. The funds derived from this tax is to be considered the local effort. This will now produce close to \$81 per pupil. Through the application of deductible millage the less wealthy districts will contribute a lower portion to this amount than the more wealthy districts. The contribution for the proposed intermediate districts range from about \$6 to \$150 per pupil. This is to be assessed and collected from each local district. Intermediate districts are employed here in the calculations for illustration purposes. All funds derived from this tax levy will be collected by the State and redistributed to each district at the rate of \$81.21 per pupil plus the allotment by the State. The calculations of the contributions for each of the proposed intermediate districts are reported in Table 4.23 and a diagram showing the relative proportions of contributions by the State, local district, and the Federal Government for the year 1980 are outlined in Figure 2. The sloped line represents the varying levels of local contribution based on their ability to pay through assessed valuation of property.

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ESTIMATED CONTRIBUTIONS TO EDUCATION BY SOURCE, BY DISTRICT: 1980 (In Dollars Per Pupil)



Implementation of the Financial Plan

It is not the intent of this dissertation to outline in detail the implementation of a desirable financial plan. This would require further research and study. Such a plan is important to North Dakota and should be immediately pursued by the State Department of Education and cooperating high education institutions. Some general plans for the improvement of the education program can be outlined. They are:

- 1. Eliminate weighted payments in favor of small districts unless they fall within the 10 percent identified as truly isolated.
- 2. Establish full State support of pupil transportation and capital outlay. This would relieve the local district of any extraordinary costs that may tend to reduce their ability to support other elements of the program. By doing so, the State has relieved any unusual burdens from any local school district and is thereby fostering a more equitable educational opportunity.
- 3. Increase in expenditures for education so that the per pupil expenditure per year will increase to \$535 by 1980.
- 4. Reduce local effort to about 12.5 percent through a standard deductible millage of about 15 mills.
- 5. Increase State effort to about 70 percent.
- 6. Increase in State effort should coincide with a major transfer of taxable resources from property to sales, income and business.
- 7. Local school districts should be given the provision to increase local property tax beyond the standard millage set for the State. This will permit local improvements on the education program offered.

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Instructional Program

If the plans relating to school district organization, personnel and finances are implemented, the major elements originally limiting the instructional program will have been removed. The plans listed here are in part overlapping previous statements but as a matter of relevance are repeated. To improve the instructional program, the State must insure that:

1. Each child is to be provided with a fully qualified instructor by the year 1970.

- 2. Each instructor is to be supported by administrative and service personnel within the possibilities of the most efficient deployment of present State personnel.
- 3. Elementary schools and classrooms are to be organized into units sufficiently large to permit divisions of instruction on a grade level type of arrangement.
- 4. The State should establish a minimum comprehensive program for all secondary schools.

Justification for Plans

<u>Elementary.</u> The instructional program at the elementary level should be staffed so as to provide each child with a fully qualified teacher according to the new North Dakota standards. It is equally important in the provision of an equitable program that the schools be so organized so as to permit the division of instruction on a grade-level type of arrangement. This will reduce the span of instruction now required in the one-room combination classes. <u>Secondary</u>. The proposed plan requires that each child would have access to a minimum comprehensive program. A comprehensive program consists of four major elements interwoven to provide individualized instruction. The four elements are:

- 1. General education experiences for all students.
- 2. Programs for those planning to enter the labor market immediately after graduation.

- 3. Programs for those who plan to enter college upon graduation.
- 4. Studies of special interest, *i.e.*, music, art.

An example of a comprehensive program which is now operating in a North Dakota secondary school with an enrollment of about 250 pupils is outlined on the next page. This program is adaptable to almost all schools proposed in this plan. In the 10 percent of schools with lower enrollments the program should still be offered despite higher unit costs. Intermediate school districts services, however, should aid in providing a full program.

Comprehensive Program

General	Education:	Vocational Program:
а.	English, 4 years	a. Home Economics
b.	General Mathematics	b. Business and Office Education
с.	American and World History	c. Distributive Education
d.	General Science	d. Carpentry
e.	Problems of Democracy	e. Vocational Education - Agriculture
f.	Health and Physical	f. Electrical
	Education	g. Mechanics
		h. Drafting
College	Preparatory:	Special Interests:
8.	Foreign Languages: Latin, German, Romance, Lang.	a. Music: Chorus, Band, Orchestra
Ъ.	Russian Algebra, three years	b. Art
c.	Trigonometry	c. Debate and drama
d.	Biology	d. Driver Education
e.	Chemistry	
f.	Geometry	
g.	Physics	

h. International Relations

Secondary. The proposed plan requires that each child would have access to a minimum comprehensive program. A comprehensive program consists of four major elements interwoven to provide individualized instruction. The four elements are:

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- 2. Programs for those planning to enter the labor market immediately after graduation.
- 3. Programs for those who plan to enter college upon graduation.
- 4. Studies of special interest, i.e., music art.

An example of a comprehensive program which is now operating in a North Dakota secondary school with an enrollment of about 250 pupils is outlined below. This program is adaptable to almost all schools proposed in this plan. In the 10 percent of schools with lower enrollments the program should still be offered despite higher unit costs. Intermediate school districts services, however, should aid in providing a full program.

Comprehensive Program

A Supplement to the Plan: Modern Educational Technology

Any major application of modern educational technology in North Dakota would require sizeable increases in expenditures for education. Certain efforts in this line would markedly improve the proposed programs. To supplement the plans outlined, the State should seriously consider a plan for an education television network to cover all sections of the State. The statewide use of ETV could aid in the improvement of instruction, and it would supplement otherwise minimal programs in low enrollment schools. Plans should include:

- 1. Six educational regions similar to the areas outlined on Map II. The size and location of the regions are largely determined by the physical characteristics of the State, population centers, and the coverage of a class "A" television signal. Originating centers for each region could be located at Williston, Dickinson, Minot, Bismark, Grand Forks, and Fargo. All but the latter two are centrally located and are the largest urban centers in each region.
- Regional Education Centers in each of the six regions. A center should be fully equipped for basic educational systems; television transmission and receiving systems, and telelecture.
- 3. Regional education center professional staffs of master teachers, education specialists, technicians, and administrative personnel in conjunctions with the intermediate district services.

A network such as the above would enhance any elementary or secondary program in the State. The comprehensive high school program with a full array of courses could become a reality in all sectors of the State.

<u>Financial Support</u>. The calculations of the total expenditure for education do not include the costs of the Regional Education Centers. Since this is to be a statewide system, it is advisable that direct appropriations by the legislature be made for the support of the plan. Some of the initial planning and construction could likely be funded through the United States of Education under the Elementary and Secondary Education Act of 1965.





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CHAPTER V

COMMENTARY AND IMPLICATIONS

The assumption underlying the several theses advanced in this dissertation was:

Given a viable and healthy education system, North Dakota would

be equipped more appropriately to educate its children and youth.

In Chapter III, characteristics of a potentially viable system were described, and in Chapter IV a specific plan of action was proposed that would, if seriously implemented, give North Dakota the kind of system it requires.

The formulation of a desirable status is defended on the position that although it may not be fully attainable within present resources, it aids in the definition of organization goals and provides an orientation for direction. The goals of the desirable status outlined comply with the aim of the North Dakota education system, and hence, aims at an improvement in the equality of an appropriate opportunity for all youth. Additionally, it provides a criterion by which the present system can be evaluated.

The theses herein advanced, however, do not solve the crucial problems of education in North Dakota. Remaining unanswered are such questions as the following:

1. What kind of education is best suited for the diverse groups of children and youth in North Dakota? For the rural, rural-urban

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metropolitan; college-bound, terminal-agricultural, terminalvocational; young men and women?

- 2. What processes, particularly in the pupil-teacher relationship, are best suited for optimal development of each pupil's intellectual, social, and personal potentials?
- 3. What finance system would conform to the plan advanced in this dissertation?

To answer these questions, the State needs to emphasize, to an extent heretofore unrealized, systematic programs of research and experimentation. To do so, the State's institutions of higher learning will have to assume greater responsibility for systematic research in education. Moreover, they must devote substantial portions of their resources and ideas to this problem, not only because the problems themselves are complex and challenging, but because they are crucial to all aspects of development in the State.

How feasible are these proposed endeavors? The State already possesses the basic resources required by these tasks. The proposed plan of action shows concrete ways in which these resources may be used more effectively and efficiently for educational improvement. Moreover, continued appraisal of the organization in meeting its objectives is important in long range planning. New demands and new residence patterns of the near future should become an integral part of the development of a statewide system. Maintenance of the present Statewide Study of Education could aid in achieving this end. A continuation of its original purposes to assess the education program and to strengthen the role of the State Department of Public Instruction are invaluable in long range planning. The incorporation of the Statewide Study

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of Education in the organizational structure would provide an administrative unit for educational research, development and planning.

The principal barrier remaining is one of political and psychological determination. These barriers can only be overcome through the joint and continuing efforts of the State's principal institutions; local districts, the State Department of Public Instruction, and the universities. The successful completion of a jointly conducted Statewide Study of Education would seem to be the first major step toward achieving a Statewide commitment to a specific plan of improvement. Were the cooperative actions initiated in the study to be continued to successive steps of planning and plan implementation, North Dakotans can truly anticipate a healthy and viable education system equipped more appropriately to educate its children and youth.

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APPENDICES

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APPENDIX TABLE A

	Eler	nentary	Secondary		
Type of District	Male	Female	Male	Female	
Twelve Grade			_		
Large	7.0	27.7	19.2	9.7	
Medium	3.6	20.2	23.0	9.6	
Small	3.5	26.3	28.4	12.6	
Elementary					
Graded	.6	6.3			
One Room Rural	•3	10.8			
TOTAL	15.0	85.0	69.1	30.9	

SEX OF ELEMENTARY AND SECONDARY TEACHERS (In Percent)

Source: Statewide Study of Education, Educational Personnel in North-Dakota Public Schools: 1965-66.

APPENDIX TABLE B

				El	ementar	У		
Type of School	20	<u>30</u>	40	<u>50</u>	<u>60</u>	<u>65</u>		Mean
District	29	39	49	59	64	69	70+	Age
Twelve Grade								
Large	12.8	7.3	6.0	6.2	2.0	0.4	-	38.5
Medium	7.6	4.1	4.1	6.0	1.8	0.4	0.1	41.2
Small	8.0	4.0	5.7	8.6	2.9	0.4	0.1	45.6
Elementary								
Graded	0.9	0.9	1.4	2.5	0.7	0.2	-	47.4
One Room Rural	0.3	0.5	1.0	1.8	0.8	0.3	0.1	51.6
TOTAL	29.6	16.8	18.2	25.1	8.2	1.7	0.3	41.9

AGE OF ELEMENTARY AND SECONDARY TEACHERS: 1965-66 (In Percent)

	Secondary							
Type of School District	<u>20</u> 29	<u>30</u> 39	<u>40</u> 49	<u>50</u> 59	<u>60</u> 64	<u>65</u> 69	70+	Mean Age
Twelve Grade Large Medium Small	⊥ 8.5 16.5 22.5	9.2 8.2 9.0	6.4 2.8 4.5	3.0 1.8 3.3	1.4 0.5 1.1	0.4 0.3 0.4	0.1 _ _	38.1 32.5 34.4
TOTAL	47.5	26.4	13.7	8.1	3.0	1.1	0.1	34.5

Source: State Department of Public Instruction Personnel Card 1.

Elementary N = 4542 Secondary N = 2465
APPENDIX TABLE C

		Elemen	tary	
Type of	First Grade Second Grade			Grade
District	Temporary	Permanent	Temporary	Permanent
Twelve Grade Large Medium Small	40.0 16.6 11.5	35.7 14.4 8.0	3.4 9.5 11.2	20.9 59.5 69.3
Elementary	4.5	6.4	9.9	79.2
TOTAL	21.8	18.9	7.9	51.4

PROFESSIONAL CERTIFICATES HELD BY TEACHERS: 1965-66 (In Percent)

Type of	Secondary First Grade			
District	Temporary	Permanent		
Twelve Grade Large Medium Small	31.3 38.2 49.4	68.7 61.8 50.6		
Elementary	-	-		
TOTAL	40.8	59.2		

Source: State Department of Public Instruction Personnel Card 1.

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TABLE
APPENDIX

SEMESTER HOURS EARNED IN THE LAST FIVE YEARS BY NONDEGREE ELEMENTARY TEACHERS WITH FIVE OR MORE YEARS OF PROFESSIONAL EXPERIENCE: 1965-66 (In Percent)

				Sene	ster Hou	irs Earne	þá	
School Districts	5-9	η Γ-0Ι	15–19	20-24	25-29	30 - 34	Total Number	Percent Group Active
Twelve Grade								
Large	29.2	22.9	10.4	7.3	9.4	10.4	96	36.4
Medium	33.0	18.2	16.1	8 . 8	ŝ	18.9	285	53.4
Small	37.2	20.5	11.8	5.9	5.6	18.2	391	44.2
Elementary Crosse	r yo			c u	r 7	r 2	Ŷ	1 Yu
one Room Rural	43.8	9.00	3.1 3.1	18.8		21.9	88	20.0
TOTAL	34.4	19.9	14.2	8.2	5.9	17.4	864	43.9

Source: State Department of Public Instruction Annual Elementary School Report and the Annual Report of Schools Offering a High School Program.

APPENDIX TABLE E

	Loss	Gain	Net Result
Preparation	Percent of Teachers who did not Return	Percent of New Teachers 1965-66	
Less than 90 Semester hours	25.8	23.5	- 1.7
90 Semester hours or more but less than B.A.	22.3	7.4	-14.9
B.A. or more but less than M.A.	43.8	63.2	+19.4
M.A. degree or more	8.0	5.9	- 2.1

TEACHER TURNOVER 1964-65 TO 1965-66

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Source: State Department of Public Instruction Personnel Cards 1964-65 and 1965-66.

Summary:

- 1. Losing most qualified (M.A.'s)
- 2. Retaining least qualified (less than 90 semester hours)

- 3. Replacing greatest losses with degree personnel
- 4. Overall picture shows improvement in qualification level.

APPENDIX TABLE F

Type of District	Number of Districts	Approximate Taxable Valuation	Average District Taxable Valuation
Twelve grade			
Large	13	78,000,000	6,000,000
Medium	61	361,000,000	5,900,000
Small	204	159,500,000	757,000
Elementary			
Graded	81	49,242,000	607,900
One Room Rural	168	31,460,000	187,300
TOTAL	527	678,000,000	1,290,000

SCHOOL DISTRICT TAXABLE VALUATIONS: 1965-66

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Source: Statewide Study of Education Finance Tables.

APPENDIX TABLE G

GENERAL FUNDS EXPENDED BY TYPE OF DISTRICT

	Estimated Expend	liture
Type of District	Dollars	Percent
12 Grade Districts Large Medium Small	\$24,200,000 17,600,000 21,900,000	35.8 26.1 32.3
Elementary	3,800,000	5.8
TOTAL	\$67,500,000	100.00

Source: Statewide Study of Education Finance Tables.

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PROJECTED SUPPLY, DEMAND, AND GAP OF NORTH DAKOTA SCHOOL PERSONNEL, 1965-80

		Elementar	У		Secondary			Total	
	Demand ¹	Supply	Gap	Demand ^I	Supply	Gap	Demandl	Supply	Gap
	for New	Likely	Supply	for New	Likely	Supply	for New	Likely	Supply
	Teachers	to Enter	Minus	Teachers	to Enter	Minus	Teachers	to Enter	Minus
Year			Demand			Demand			Demand
1965	233	233	t	313	313	ı	546	546	1
1966	233	246	+13	316	344	+28	549	590	-t4-
1961	232	295	1 63	319	312	- 7	551	607	+56
1968	228	361	+133	323	381	+58	551	742	161+
1969	226	427	+201	326	451	+125	552	878	+326
1970	222	100	+178	324	423	66+	546	823	+277
1971	222	467	+245	322	493	171+	544	960	914+
1972	222	506	+284	320	535	+215	542	IULI	661+
1973	221	530	+309	318	559	+241	539	1089	+550
1974	219	556	+337	316	587	+271	535	1143	+608
1975	217	579	+362	315	119	+296	532	0611	+658
1976	218	604	+386	313	637	+324	531	1241	+710
1977	221	626	+405	306	661	+355	527	1287	+760
1978	226	637	114+	300	673	+373	526	1310	+784
1979	229	648	4419	293	684	+391	522	1332	+810
1980	233	658	+425	293	694	104+	526	1352	+826
	·								

Source: Statewide Study of Education Personnel Tables.

l Demand based on 1965-60, 20.2 percent turnover. Elementary turnover = 28.7 percent of total.

APPENDIX TABLE I

Year	Local	County	State	Federal	Total
1966	\$330,59	\$104.06	\$129.04	\$ 40.79	\$574.48
1967	284.89	104.06	152.24	38,93	580.12
1968	269.19	104.06	175.44	46.75	595.44
1969	253.49	104.06	198.64	51.53	607.72
1970	237.79	104.06	221.84	56.13	619.82
1975	159.29	_	392.75	81.86	633.90
1980	\$ 80.75		\$454.19	\$113.12	\$648.06

PRESENT GENERAL FUND EXPENDITURES BY CATEGORY

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TABLE	
APPENDIX	

1980
DISTRICTS:
SCHOOL
CITY
AND
INTERMEDIATE
PROPOSED
6F
NROLLMENTS
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		1966 Enroll	ment	196	80 Enrollment	ţ
ype of District	Elementary	Secondary	Total	Elementary	Secondary	Total
П	5,858	2,516	8.374	6,817	2,855	9.672
II	12,802	5.977	18,779	10.456	4.390	14,846
III	9,174	3,664	12,838	7,851	3.036	10.887
IV	9,037	4,536	13,573	6.635	2,913	9.548
Λ	11,770	5,204	16.974	9.608	3,930	13.538
IN	9,212	4,243	13,455	6.837	2,881	9.718
IIA	8,869	2.989	11.858	7.124	2.669	9.793
VIII	9,652	4,417	14,069	7,332	2,586	9,918
ity Districts						
Fargo	9,623	2,948	12,571	10,480	4,181	14,761
Grand Forks	6,865	2,350	9,215	10,976	4,487	15,463
Minot	7,062	2,353	9,414	10,866	4,161	15,027
Bismark	4,679	1,785	6,464	7,256	2,743	666*6
TOTAL	104,703	42,781	147,484	102,238	40,832	143,070

Source: Estimated and Projected School Age Population, Charles Libera, University of North Dakota.

