# AN ANALYSIS OF THE EDUCATIONAL SERVICES PROVIDED BY MICHIGAN'S K-12 PUBLIC SCHOOLS GROUPED ACCORDING TO COST-RELATED INDICATORS OF SUPPORT POTENTIAL

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ABSTRACT

AN ANALYSIS OF THE EDUCATIONAL SERVICES PROVIDED BY MICHIGAN'S K-12 PUBLIC SCHOOLS GROUPED ACCORDING TO COST-RELATED INDICATORS OF SUPPORT POTENTIAL

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Purposes, Procedures And Design

This investigation was undertaken to study selected educational services provided by Michigan's K-12 public school districts grouped according to cost-related indicators of support potential (CRISP). The primary purpose of the study was to determine if differences exist between the CRISP groups in the provision of educational services and the nature of the differences should they exist.

Data were used from the 1972-73 school year and Michigan's 528 (Detroit was excluded) public K-12 school districts were ranked from high to low on each of the four cost factors (CRISP): Size, effort, wealth and expenditures. Four groups of school districts were determined on the basis of the CRISP rankings and resulted in a sample of 153 school districts with 60 districts in group IV, 28 districts in group III, 31 districts in group II and 34 districts in group I (the lowest financial support group).

Eleven educational services were selected to represent a part of a conceptualized model which defines a total school program in terms of four distinct parts: 1. The curriculum, 2. The organization, 3. The attitudes held by students, parents and teachers and 4. Educational services. Forty items were developed as variables for an Educational Services Inventory (ESI). The ESI was used to determine the existence and extent of educational services in the sampled school district CRISP groups. The specific data were obtained from the Michigan Department of Education and a survey instrument sent to the superintendent of each of the 153 school districts.

The ESI data were processed on computer cards for each of the school districts and a one-way analysis of variance with fixed effects statistical treatment was used to test for differences in the educational services between the CRISP groups. Scheffé Post Hoc comparisons were made to determine which CRISP group differences contributed to the significant F.

The range, mean and standard error of the mean were computed for the defining items and displayed graphically to show existing relationships between the items by the

CRISP group school districts. The .05 level of confidence was used to define the probability level for each test.

## Major Findings And Conclusions

The following findings were drawn from the investigation: (1) School districts with comparatively low financial support potential place a higher priority on transportation as an educational service than districts with high support potential. (2) School districts with greater financial support potential provide more of the educational services defined as teaching, administration, guidance and counseling, library and attendence services than those districts with lesser financial support potential. (3) There are no differences in the provision of educational services defined as health, testing, summer school and adult education between the CRISP group school districts. (4) The educational services defined as teaching, administration, testing and transportation were provided by all of the school districts in all of the CRISP groups. (5) The educational service defined as curriculum consultants is unique to the CRISP group school districts with the highest level of financial support potential. (6) The average salaries paid to professionals, the average level of academic training of professionals and, for the most part, the years

of experience of professionals (except for superintendents) are directly related to the financial support potential of the CRISP group school districts. (7) No significant differences were found in the ratios of various professional personnel per 1000 between the CRISP groups with the exception of guidance and counseling.

On the basis of these findings, it is concluded that the extent to which educational services are provided by school districts is directly related to the financial support potential of the districts. Some educational services are provided by all school districts regardless of financial support potential although the extent of the service may vary. One educational service is unique to school districts with the highest level of financial support potential (curriculum consultants).

It is also concluded that the provision of educational services measures inputs into a school program and doesn't necessarily reflect specific outcomes. As the need increases for better cost-benefit data, an Educational Services Inventory could provide an efficient method for gaining comparative information.

ACKNOWLEDGMENTS

In appreciation of the guidance and time so freely given, I would like to thank Dr. Herbert C. Rudman, my advisor. I would also like to thank the members of the doctoral committee, Dr. Cole S. Brembeck, Dr. Stanley E. Hecker, Dr. Fred R. Ignatovich and Dr. Vandel C. Johnson.

I also greatly acknowledge my wife Marcia for her moral support and understanding.

TABLE OF CONTENTS

## List of Tables

List of Tables (Continued)

List of Tables (Continued)

## List of Figures

## List of Appendices

# CHAPTER I

# THE PROBLEM

## Purpose Of The Study

The primary issue to be addressed in this study is whether or not a difference exists in the number of educational services provided between school districts in Michigan. This difference will be explored through relating the number and type of educational services offered (as measured by an Educational Services Inventory ESI), and the relative wealth of Michigan's K-12 public school districts. These districts will be grouped in quartiles and described according to selected cost-related indicators of support potential (CRISP). Also of some interest is the nature of the differences.

## Significance Of The Problem

The desire and need to determine the relationship between certain specified financial inputs and subsequent or consequent educational outcomes have long been the appropriate concern as well as the ubiquitous plight of those dealing with educational finance and evaluation.

As the perennial plea is sounded for additional funds to finance educational programming, and more specifically, to provide compensatory equity for districts with limited local resources, a corresponding request is expressed and sometimes

demanded for empirical evidence to prove that the expenditure of additional dollars yields additional educational benefits.

"The total cost of public elementary and secondary education in the United States has more than doubled in the past ten years, increasing from $15.6 billion in 1959-60 to $39 billion in 1969-70. Total elementary and secondary educational expenditures including current expenses, capital outlay, and interest rose from $35.8 billion in 1968-69 to $39.5 billion in 1969-70 for an increase of 10.4 percent. During this same period the total current expenditure, the largest and most significant component of which is teachers' salaries, increased from $29 billion to $32.3 billion for an increase of 11.2 percent. An increase in enrollment in public elementary and secondary schools from 36.3 million to 45.7 million from 1960 to 1969 was a cause for part of the total increase in expenditures for public elementary and secondary education. A projected figure for 1975 indicates a further increase to 46.4 million."[1]

## Accountability

Accountability seems to be a product of our age and has become somewhat of a byword in the field of education, serving

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[1]"School Crisis Builds Despite Stable Rolls", The New York Times. (November 29, 1971), p. 50.

as the basis for a Six-step Accountability Model adopted by the Michigan State Board of Education.[2] Perhaps it is long overdue.

Although accountability has become part of the jargon in education, its concept may exist well in advance of measurement techniques to support it.[3]

The public attitude toward educational expenditures generally is one of satisfaction, or perhaps lack of dissatisfaction. Although some educators seem to feel that through accountability education will be operated on a "business-like" basis, others have taken a more cautious approach with warnings of previous attempts to use simple solutions to cure complex financial problems.[4]

Cost-Benefit Factors

Cost data are currently more amenable to measurement than are benefit data. A perennial cost problem is that

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[2] The Common Goals of Michigan Education (Lansing, Michigan: Michigan Department of Education, 1971).

[3] "Better Way to Spend Education Dollars", U. S. News and World Report. 68:46 (March 16, 1970).

[4] Calvin Grieder, "Educators Should Welcome Pressure for Accountability", Nations Schools. 85:14 (May, 1970).

empirical data indicate variations because of the school population, class hours or instruction, quality of equipment and materials. These factors must be controlled in order to derive valid cost-benefit information.[5]

As was pointed out by Prest and Turvey, one practical value of the cost-benefit analysis is that it causes questions to be raised. It uncovers unsuspected problems, implicit assumptions, and preconceptions that would not ordinarily be revealed. And --- "even if cost-benefit analysis cannot give the right answers, it can sometimes play the purely negative role of screening projects and rejecting those answers which are obviously less promising."[6]

"As the cost of goods and services seem to be accelerating at a geometric rate, the public is becoming increasingly aware of what a dollar will or will not buy and is beginning to demand a 'bigger bang for the buck'. Hospital and medical

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[5]Robert J. Garvere, Modern Public School Finance, (London: The MacMillan Company, Collier-MacMillan Limited, 1969), p. 95.

[6]A. R. Prest and Ralph Turvey, "Cost-Benefit Analysis: A Survey", The Economic Journal (December, 1965), p. 730.

care, education, legal services, government, and just about every other area of activity are being brought to account for the dollars invested in them."[7]

Assuming demands for educational accountability continue as escalating educational costs mount, educational administrators might well use the opportunity to develop insights into aspects of the school program pursuant to making better priority decisions on financial expenditures; perhaps with some degree of parsimony. The need to view various functions of the school district with an eye toward cost-effectiveness, and at the same time develop and maintain those services that enable students to progress optimally may never have been greater.

An analysis of educational services provided by school districts is important for a number of reasons. First, it can provide additional dimensions for evaluating the school program. Secondly, it can add to the knowledge of the relationship between educational services and school district financial support potential. And thirdly, it can give some insights into the priorities placed on certain educational services by the controlling boards.

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[7]David E. Barbee and Aubrey J. Bouck, Accountability in Education, (New York: Petrocelli Books, 1974), pp. xiv.

## Hypotheses To Be Tested

Three general hypotheses to be tested are stated in general terms. Forty hypotheses relating to General Hypothesis I are stated operationally.

### General Hypothesis I

There are differences between school districts classified according to selected cost-related indicators of support potential (CRISP) in the provision of certain educational services as quantified in this investigation by an Educational Services Inventory (ESI). The selected cost-related indicators of support potential are defined in terms of quartile rankings according to size, effort, expenditure, and ability.

Operational HIa. - - A difference will be found between CRISP groups and the number of educational services defined as "average teachers salary".

Operational HIb. - - A difference will be found between the CRISP groups and the number of educational services defined as "percent of teachers with MA degree".

Operational HIc. - - A difference will be found between the CRISP groups and the number of educational services defined as "number of teachers per 1000 pupils".

Operational HId. - - A difference will be found between the CRISP groups and the number of educational services defined as "average years of experience for teachers".

Operational HIe. - - A difference will be found between the CRISP groups and the number of educational services defined as "average salary of superintendents".

Operational HIf. - - A difference will be found between the CRISP groups and the number of educational services defined as "years experience of superintendent".

Operational HIg. - - A difference will be found between the CRISP groups and the number of educational services defined as "academic degree of superintendent".

Operational HIh. - - A difference will be found between the CRISP groups and the number of educational services defined as "average salary for secondary principal".

Operational HIi. - - A difference will be found between the CRISP groups and the number of educational services defined as "average years experience for secondary principal".

Operational HIj. - - A difference will be found between the CRISP groups and the number of educational services defined as "average salary for elementary principal".

Operational HIk. - - A difference will be found between the CRISP groups and the number of educational services defined as "average years experience for elementary principals".

Operational HIl. - - A difference will be found between the CRISP groups and the number of educational services defined as "average salary for guidance and counseling personnel".

Operational HIm. - - A difference will be found between the CRISP groups and the number of educational services defined as "average years of experience for guidance and counseling personnel".

Operational HIn. - - A difference will be found between the CRISP groups and the number of educational services defined as "average academic degree for guidance and counseling personnel".

Operational HIo. - - A difference will be found between the CRISP groups and the number of educational services defined as "number of guidance and counseling personnel per 1000 pupils".

Operational HIp. - - A difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for guidance and counseling".

Operational HIq. - - A difference will be found between the CRISP groups and the number of educational services defined as "number of standardized tests administered in terms of grades".

Operational HIr. - - A difference will be found between the CRISP groups and the number of educational services defined

as "scoring method in terms of hand scored versus machine scored".

Operational HIs. - - A difference will be found between the CRISP groups and the number of educational services defined as "use made of test results in terms of the extent to which tests are used in educational planning".

Operational HIt. - - A difference will be found between the CRISP groups and the number of educational services defined as "health services provided".

Operational HIu. - - A difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for health".

Operational HIv. - - A difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for health".

Operational HIw. - - A difference will be found between the CRISP groups and the number of educational services defined as "librarians average salary".

Operational HIx. - - A difference will be found between the CRISP groups and the number of educational services defined as "librarians average academic degree".

Operational HIy. - - A difference will be found between the CRISP groups and the number of educational services defined

as "librarians average years experience".

Operational HIz. - - A difference will be found between the CRISP groups and the number of educational services defined as "librarians per 1000 pupils".

Operational HIaa. - - A difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for library services".

Operational HIbb. - - A difference will be found between the CRISP groups and the number of educational services defined as "consultants average salary".

Operational HIcc. - - A difference will be found between the CRISP groups and the number of educational services defined as "consultants average academic degree".

Operational HIdd. - - A difference will be found between the CRISP groups and the number of educational services defined as "consultants average years experience".

Operational HIee. - - A difference will be found between the CRISP groups and the number of educational services defined as "consultants per 1000 pupils".

Operational HIff. - - A difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for curriculum consultants".

Operational HIgg. - - A difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for adult education".

Operational HIhh. - - A difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for adult education".

Operational HIii. - - A difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for summer school".

Operational HIjj. - - A difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for summer school".

Operational HIkk. - - A difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for transportation".

Operational HIll. - - A difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for transportation".

Operational HImm. - - A difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for attendance".

Operational HInn. - - A difference will be found between the CRISP groups and the number of educational services defined

as "percent of General Fund spent for attendance".

Operational HIoo. - - A difference will be found between the CRISP groups and the "total number of educational services".

General Hypothesis II

The percentage of school districts providing the defined educational services is directly related to school district financial support potential.

Operational HIIa. - - The percentage of school districts providing guidance and counseling is directly related to school district financial support potential.

Operational HIIb. - - The percentage of school districts providing library services is directly related to school district financial support potential.

Operational HIIc. - - The percentage of school districts providing curriculum consultant services is directly related to school district financial support potential.

Operational HIId. - - The percentage of school districts providing summer school services is directly related to school district financial support potential.

Operational HIIe. - - The percentage of school districts providing adult education services is directly related to school district financial support potential.

Operational HIIf. - - The percentage of school districts providing health services is directly related to school district financial support potential.

Operational HIIg. - - The percentage of school districts providing attendance services is directly related to school district financial support potential.

General Hypothesis III

There is a direct relationship between certain selected items defining the educational services and the financial support potential of school districts.

Operational HIIIa. - - The average salary paid to teachers is directly related to the support potential of school districts.

Operational HIIIb. - - The average salary paid to superintendents is directly related to the support potential of school districts.

Operational HIIIc. - - The average salary paid to secondary principals is directly related to the support potential of school districts.

Operational HIIId. - - The average salary paid to elementary principals is directly related to the support potential of school districts.

Operational HIIIe. - - The average salary paid to

guidance counselors is directly related to support potential of school districts.

Operational HIIIf. - - The average salary paid to librarians is directly related to the support potential of school districts.

Operational HIIIg. - - The average years of experience for teachers is directly related to the support potential of school districts.

Operational HIIIh. - - The average years of experience for superintendents is directly related to the support potential of school districts.

Operational HIIIi. - - The average years of experience for secondary principals is directly related to school district support potential.

Operational HIIIj. - - The average years of experience for elementary principals is directly related to school district support potential.

Operational HIIIk. - - The average years of experience for guidance counselors is directly related to school district support potential.

Operational HIIIl. - - The average years experience for librarians is directly related to school district support potential.

## List of Tables

## List of Tables (Continued)

Table

Operational HIIIm. - - The percentage of teachers with MA degrees is directly related to school district support potential.

Operational HIIIn. - - The average level of academic degree for superintendents is directly related to school district support potential.

Operational HIIIo. - - The average level of academic degree for guidance and counseling personnel is directly related to school district support potential.

Operational HIIIp. - - The average level of academic degree for librarians is directly related to school district support potential.

Operational HIIIq. - - The number of teachers per 1000 pupils is directly related to school district support potential.

Operational HIIIr. - - The number of guidance and counseling personnel per 1000 pupils is directly related to school district support potential.

Operational HIIIs. - - The number of librarians per 1000 pupils is directly related to school district support potential.

Operational HIIIt. - - The expenditure per pupil for guidance and counseling services is directly related to school district support potential.

Operational HIIIu. - - The expenditure per pupil for library services is directly related to school district support potential.

Operational HIIIv. - - The expenditure per pupil for summer school services is directly related to school district support potential.

Operational HIIIw. - - The expenditure per pupil for adult education services is directly related to school district support potential.

Operational HIIIx. - - The expenditure per pupil for transportation services is directly related to school district support potential.

Operational HIIIy. - - The expenditure per pupil for attendance services is directly related to school district support potential.

Operational HIIIz. - - The expenditure per pupil for health services is directly related to school district support potential.

Operational HIIIaa. - - The percent of general fund expenditure for health services is directly related to school district support potential.

Operational HIIIbb. - - The percent of general fund

expenditure for summer school services is directly related to school district support potential.

Operational HIIIcc. - - The percent of general fund expenditure for adult education services is directly related to school district support potential.

Operational HIIIdd. - - The percent of general fund expenditure for transportation services is directly related to school district support potential.

Operational HIIIee. - - The percent of general fund expenditure for attendance services is directly related to school district support potential.

Forty null hypotheses are presented in Chapter III and will be tested for statistical significance by computing the F statistic for the analysis associated with each of the educational services.

Although questions of the relationship between educational services and school district relative wealth are particularly appropriate in studying various methods of funding public school operations, certain difficulties are inherent in any such measurement. At best it is difficult if not impossible to completely separate all the tangentially related factors which influence educational processes; however, by design, the

study of specific relationships between relative wealth and processes, i. e. selected cost-related indicators of support potential and educational services can give some better understanding in the methodology of school district program evaluation.

Although, historically, school programs have tended to maintain the status quo, the rate or number of substantive changes in the past decade in school programs throughout the nation is remarkable. The measurement of school program components must then acknowledge the various influences of the times. Court decisions, legislative mandates and economic conditions are but a few of these influences. While it might be generally agreed that educational programs should change when the outcomes are not satisfactory, in reality, it becomes quite difficult because desired outcomes are seldom explicit.

The evaluation of school programming and how to get more and better education from the resources available is nearly everyone's appropriate concern. More and better education means a broadening and continuity of educational opportunities of many parts for many purposes; the chance for each individual to learn more in each time period, with up-to-date content that is relevant and useful to each learner.

Modern management requires evaluation of performance of educational institutions, discovering ways to improve efficiency and adequate planning for future changes.

Making a cost analysis of educational programs includes:

1. Costing and testing economic feasibility
2. Evaluating and improving programs
3. Weighing comparative advantages
4. Determining both short and longer-run cost implications
5. Estimating introductory costs
6. Conducting searches for ways of improving efficiency
7. Checking economic feasibility of policy decisions[8]

Even though a vast number of evaluative and measuring tools have been developed and used for comparing school activities, very few of these tools have dealt directly with those educational services provided by school districts that are, to a large extent, school board prerogatives.

It is commonly held that school district operational expenditures are made up of approximately 85 to 90 percent for salaries of personnel and a corresponding 10 to 15 percent

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[8]Philip H. Coombs and Jaques Hallak, Managing Educational Costs, (New York: Oxford University Press, 1972), p. ix.

for non-salary expenditures. The priorities placed on educational services provided by school districts of varying relative wealth become items of interest for the purpose of this study. The total operational expenditures for public education in Michigan during the 1972-73 school year was reported by the Michigan State Department of Education to be in excess of two billion dollars.[9] Fifteen percent of the total operational expenditure would be approximately $30,000,000; the amount that public boards of education in Michigan expended on essentially board-priority items.

It should be noted here that the primary emphasis of this study is placed on the number or quantity of educational services provided in school districts and although little reference is made that "more is better" there are some service components that imply a certain quality to the service.

## Educational Services

The school curriculum is conceptualized by Dr. Herbert C. Rudman as having four elements: (1) the educational program,

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[9]Michigan State Department of Education, Bulletin 1012, (Lansing, Michigan, 1973).

(2) educational services, (3) the organization of the curriculum, (4) the values held for education. Rudman has demonstrated that the school program can be delineated and that the defined elements can be measured.[10]

For the school curriculum conceptualized in the foregoing model, the educational program consists basically of the course offerings by the school and laboratory experiences which include field trips, language laboratories, science laboratories, physical education, home economics, fine arts and the like. The organization of the school district refers to the administration of the school program and the actual manner in which school functions are carried out at the district, building and classroom levels. The school district organization may have some influence on the efficiency and effectiveness of the services provided by a school district. The values held by the various parties involved directly or indirectly with the school reflect a community expectation of the educational program. Community expectations imply some preconceived outcomes or goals desired for the school program.

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[10]Herbert C. Rudman, "The Curriculum", (East Lansing, Michigan: Unpublished report, Michigan State University, February 12, 1968), p. 1.

The educational services provided by a school district include teaching, administration, library, guidance and counseling, health, summer school, adult education, curriculum consultants, testing, transportation, and attendance. Generally, these services are ancillary to the course offerings but are an integral part of the school program.

An analysis of the components that make up the ten educational service areas identified in this study provide forty items to be used as variables. The specific selection of these items will be covered in Chapter III.

Excluded were those services not generally organized as a priority of a local board of education, but available to varying extents by other agencies. Special education and vocational education operated by intermediate districts are examples of such services.

A difficulty in measuring educational services lies not only in the lack of clearly established goals, but also in the methodology of measurement, or the lack of it. In the earlier reference made to the emphasis on accountability, it is worthy to note that models designed to make school districts accountable for educational outcomes become instead, systems for the delivery of services rather than specified goals or pursuits.

Some of the educational services have been items of interest and study because of their nature to special interest groups such as teacher characteristics; however, educational services in their totality as they relate to types of school districts and the specific relationships to other characteristics of school districts have not been fully explored.

Teaching, administration, library, guidance and counseling, and curriculum consultants are educational services that involve professionally trained personnel; therefore, the chracteristics of the personnel providing these services become items of primary interest.

For the health, summer school, testing, transportation, adult education, and attendance educational services, measurement is obtained by numbers of services provided, in some instances the methods of providing services and corresponding expenditures for the services.

Establishing relationships between the extent or number of educational services provided by Michigan's Public K-12 schools grouped according to financial support quartiles, may allow better comparisons of certain financial inputs and subsequent educational outcomes. In addition, some comparisons may be made between individual school districts

that have similar financial characteristics and the educational services they provide or may fail to provide.

## Assumptions Of This Study

Several assumptions underlie this study. It is assumed that the school curriculum as conceptualized by Rudman provides a workable model for differentiating and measuring the components of a curriculum. Ostensibly this is a reasonable assumption in that the model provides a practical approach to the actual make-up of a total school program.

The assumption is also made that the items or characteristics of items listed represent educational services and that these educational services as provided by school districts are measurable. Further, it is assumed that the instrument developed, the Educational Services Inventory, (ESI) will measure the number of educational services that exist in a school district.

A number of existing studies assuming the relationship between the cost-related factors of size, effort, ability and expenditure and the allocation of these resources for curricula and instructional procedures have been made.[11]

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[11]For one example see, J. Alan Thomas, School Finance and Educational Opportunity in Michigan, (Lansing, Michigan: Michigan Department of Education, 1968).

The presumption of cost-quality relationships from results obtained from twenty-six studies reviewed by Mort, et al. is that some relationship exists.[12] A brief summary of the results showed that with a number of methods measuring quality, a positive relationship held through all levels of expenditures and the relationship appeared to be an accelerating one. Those who spend more tend to add to the range of educational services and do a better job of focusing on the general needs of students throughout the range of ability. Additional attention and some opposing views will be presented in Chapter II on the cost-quality issue.

A last assumption is that financial and personnel data for the 1972-73 school year obtained from the Michigan State Department of Education is accurate and consistent.

With regard to the survey form, it is assumed that the chief school officer completed the form accurately, and that the items listed on the inventory form will reliably reveal the existence and extent of the educational services provided.

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[12]Paul R. Mort, Walter C. Reusser, and John W. Polley, Public School Finance, (New York: McGraw-Hill Book Co., Inc., 1960), p. 80.

## Scope And Delimitations Of This Study

The following parameters are placed on this study:

1. The study is delimited to that sample of Michigan's K-12 public school districts that rank consistently in quartile groupings on the selected cost-related factors of size, effort, wealth, and expenditure. Those school districts included in one of the quartile groups either ranked consistently in that quartile on all four of the cost-related indicators of support potential (CRISP), or ranked consistently on three of the four (CRISP) factors and in the adjacent quartile on the fourth factor. (The specific procedure is outlined in Chapter III.)

2. The variables in this study are the educational services as measured by an Educational Services Inventory (ESI) and the selected cost-related factors of size, effort, wealth and expenditures.

3. This study analyzes the educational services provided in school districts grouped according to cost-related indicators of support potential and does not include all possible educational ancillary services or permutations of financial analyses.

## Definition Of Terms

The terms used in this study are defined as follows:

1. School District. The term school district refers to those Michigan Public school systems that maintain educational programs for kindergarten through twelfth grades and operate in accordance with Michigan Law.

2. Educational Services. The term educational services refers to those services provided by boards of education which are ancillary to specific course offerings. (For the purpose of this study, services relating directly to vocational and special education are not included.)

3. Educational Services Inventory. The Educational Services Inventory (ESI) refers to the instrument used to gather information from school districts on the number or extent of education services provided.

4. Cost-Related Indicators of Support Potential (CRISP). The term cost-related indicators of support potential or cost-factors makes reference to financial characteristics of school districts for size, effort, wealth and expenditures.

5. Size. Size refers to the number of public school pupils in membership in a school district as counted on the fourth Friday after Labor Day of each year.

6. Effort. The term effort refers to the financial effort made by school districts as measured by the number of mills levied on the district's state equalized valuation (SEV) for the purpose of raising operational revenues.

7. Wealth. A school district's wealth (SEV/Pupil) is defined as the total value of the personal and real property as assessed for taxing purposes and equalized by the State divided by the number of pupils in membership on the fourth Friday after Labor Day.

8. Expenditures. The term expenditures refers to the annual dollar amount expended by a school district for each membership pupil. This amount is computed by taking the total annual expenditure for operational purposes and dividing by the number of membership pupils. (Operational expenditures exclude expenditures for capital outlay and transportation.)

9. Cost Quartile. The term cost quartile refers to a stratification of grouping school districts according to their rank on the cost factors. This results in a composite quartile ranking of school districts according to size, effort, wealth and expenditures.

One of the most commonly used methods of measuring various parts of the school program is making comparisons

with the programs or perceived outcomes from other schools of similar size and wealth. The grouping of school districts for comparative and analytical purposes is widely used and it is hoped that the educational services inventory might provide some means for administrators to better manage data by comparing a given school district and its educational services with other districts of comparable size and relative wealth.

## Organization Of The Thesis

Chapter I has dealt with the purpose of the study, the significance of the problem, a conceptual model of the school curriculum, outlining educational services, the use of an instrument designed to measure the number and extent of educational services provided in a school district, some assumptions regarding the nature of methods and data used in the study, limitations of the study, definitions of terms used and some general hypotheses regarding the data collected.

Chapter II will deal with related literature in the areas of study. Specifically, reported studies and related writings in the areas of educational program cost-analysis,

educational services and program evaluation as it relates to school district financial characteristics are reviewed. Some references are made to studies that were made prior to the 30's and 40's; however, primary emphasis is placed on information reported since the middle 1950's.

Chapter III outlines a method of quartiling Michigan's Public K-12 school districts according to selected cost-related indicators of support potential (CRISP) and develops an educational services inventory (ESI). Information and scores gathered on the educational services inventory for schools quartiled according to the cost-related indicators of support potential are reviewed and relationships are presented on correlation matrices.

Chapter IV described the characteristics, relationships, and variations of the educational services provided in school districts grouped according to the cost quartiles.

Chapter V provides a summary of the study's findings and suggests some recommendations for possible future uses of the study data.

# CHAPTER II

## RELATED LITERATURE

### Studies Relating To Educational Costs

#### Cost Effectiveness Studies

Primary emphasis during the early years of this century was placed on keeping educational costs down. Studies initiated in the 1930's by Mort created some awareness that there was variation in the effectiveness of schools and that generally those schools which produced better results were also higher consumers of economic resources.[13]

Although this study assumes no systematic relationship between school district expenditures and pupil achievement, it is not intended that this assumption repudiate Mort's findings as the methods of analyses may account for differences. Many school districts today justify the need for additional revenues on the basis of developing and retaining a highly-trained, experienced staff.

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[13]Paul R. Mort and Francis G. Cornell, A Guide for Self Appraisal of School Systems (New York: Bureau of Teachers College, Columbia University, 1937).

Many empirical studies dealing with educational expenditure levels and quality of education add to the presumption that some relationship exists. Studies of the relationship in acceptably organized districts suggest that schools that spend more contribute more to the lifelong personal happiness of their charges and to the social and economic strength of Americans as people. The word "presumption" is used advisedly. The studies individually and collectively do not give us anything approximating a mathematical proof that this is so. In projecting into the future we are faced with the same complex difficulties that confront us in most human problems--difficulties that arise from the fact that no matter what we know about today, tomorrow will be a different kind of day.[14]

In early 1966, School Management[15] published a series of articles concerned with financial factors of school districts in the United States. The stated purposes of these articles and the accompanying financial data were:

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[14]Paul R. Mort, "Cost Quality Relationships in Education". Problems and Issues in Public School Finance, R. L. Johns and E. L. Morphet, Editors (New York: National Conference of Professors of Educational Administration, 1952), p. 9.

[15]"What the Cost of Education Means to Your Schools" School Management, Vol. 10, No. 1 (January, 1966), p. 110.

1. To provide a method for any district to compare its overall costs with those of other districts in a given region and/or similar size category.

2. To provide a method of comparison for specific item expenditures such as teachers' salaries, administrative costs, transportation, etc.

3. To provide a method for districts to discover areas of overextension or underexpanding and aid in explaining the reasons.

4. To provide a method for districts to compare and evaluate the effort that the taxpayers are making in the area of education.

5. To provide a method for districts to compare expenditures, spending patterns and staffing ratios with other districts across the nation with similar overall expenditures.

6. To provide a method for the comparison of spending patterns among districts according to their ability to pay (wealth).

For each area of school business under consideration five different figures were presented:

1. National averages
2. Averages for nine regions
3. Averages for seven different size categories
4. Averages for eight different expenditure categories
5. Averages for eight different wealth groupings

The regions were arbitrarily chosen to conform with those used by the Federal Government. School districts were divided by size according to actual enrollment figures.

Size 1 - more than 25,000 pupils

Size 2 - 12,001 - 25,000 pupils

Size 3 - 6,001 - 12,000 pupils

Size 4 - 4,001 - 6,000 pupils

Size 5 - 1,201 - 4,000 pupils

Size 6 - 601 - 1,200 pupils

Size 7 - 300 - 600 pupils

Districts were placed into expenditure categories on the basis of Net Current Expenditures:

Category 1 - less than $200 per-pupil

Category 2 - $201 to $250 per-pupil

Category 3 - $251 to $300 per-pupil

Category 4 - $301 to $350 per-pupil

Category 5 - $351 to $400 per-pupil

Category 6 - $401 to $450 per-pupil

Category 7 - $451 to $500 per-pupil

Category 8 - more than $500 per-pupil

This study indicated that there are several ways of looking at district wealth - basic among these are income, assessed valuation and true valuation. For purposes of this survey the school districts were divided into eight wealth groups based on true valuation per pupil:

Group 1 - below $10,000 true valuation per-pupil

Group 2 - $10,000 to $16,000 true valuation per-pupil

Group 3 - $16,001 to $22,000 true valuation per-pupil

Group 4 - $22,001 to $28,000 true valuation per-pupil

Group 5 - $28,001 to $34,000 true valuation per-pupil

Group 6 - $34,001 to $40,000 true valuation per-pupil

Group 7 - $40,001 to $46,000 true valuation per-pupil

Group 8 - more than $46,000 true valuation per-pupil

The primary concern addressed by these articles is the problem of disseminating information. The assertion is that comparison is one of the "handiest, easiest to use and most powerful tools" for this task. These pages also strongly advocate the notion that financial factors are a very important consideration in any evaluation of the quality of a school

district. Included is a comprehensive series of expenditure income and effort charts, graphs and tables so that any school district can calculate and compare a variety of factors. These calculations lead to results that School Management term "Cost of Education Index" (CFI).[16]

The basic unit for comparisons is a per-pupil expenditure call "Expenditure Pupil Unit" (EPU) where each pupil is reduced to the equivalent of an elementary school pupil: "When it is said that $395 per EPU is being spent by the average school district, it means that $395 is being spent to educate the average elementary pupil. To find the amount being spent on secondary school pupils multiply $395 X 1.3 = $513.50 (studies have shown that for every dollar spent on elementary pupils, $1.30 is spent on secondary pupils)."[17]

A discussion of financial effort suggests that since nearly every school district in the United States receives

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[16] Ibid.

[17] Ibid.

the bulk of its local income from property taxes, "effort" be measured by the relationship between the property value of a district and the amount of income that it receives locally and be indexed as a percentage figure, i.e., if a district has $10,000 in true valuation behind each pupil and raises $500 per pupil locally the "effort index" equals 5%. (In 1966 the average effort for U. S. schools was 1.12% with only 1/10 of the schools making a 2.58% or better effort.)[18]

Results

In 1966 United States school budgets showed that instruction accounted for 55 to 90 percent of the total expenditures. In nearly all cases teachers' salaries were the largest single item (the average district spent 65 percent of the total budget for teachers' salaries). Another fairly large sum was spent for direct leadership for teachers, (principals), materials, (instructional), and clerical personnel. (Taken together these instructional expenditures accounted for nearly 80 percent of the average schools' Net Current Expenditures.)

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[18] Ibid.

A major factor in the evaluation of instructional expenditures was the amount spent for teaching materials. According to School Management,[19] spending for teaching materials and textbooks "appears to be a very sensitive barometer of how well a district is doing financially". A study of expenditure categories show that high spending districts outspent low-expenditure districts for instructional materials by nearly six to one.

The percentage of the budget spent for administration continued to decline from previous years while the amount spent per-pupil increased slightly. Size was reported to be an important factor in administration costs. Smaller districts spent an inordinately high amount per-pupil for administration services ($25.00 per-pupil for small districts compared to $9.00 per-pupil for large districts). There was a positive relationship between administrative expenditures and expenditure category. It was also reported that administrative salaries vary with district size (the larger districts pay the larger salaries) and those districts in the high expenditure categories pay higher administrative salaries than do their low-expenditure counterparts. Teacher

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[19] Ibid.

salaries follow a pattern very similar to administrative salaries.

A study of the districts grouped according to wealth indicated that wealth did not affect spending per-pupil as might be expected (at least 10 percent of the districts in each of the lower seven wealth groups were spending more than the average district in the wealthiest group). An inverse relationship was reported between district wealth and the "effort index". The national average for the wealthiest districts was 1.12 percent while the average for the wealthiest districts was 0.50 percent and 75 percent of the poorest districts exceeded the national average for effort.

The wealthiest districts were spending more per-pupil on Net Current Expenditures ($80 per-pupil above the national average and $131 per-pupil above the average for the poorest districts). While most of the additional money spent by the wealthy districts was centered on instruction, it was reported that the affect of district wealth on expenditures for instructional materials appeared to be minimal (the wealthiest districts actually spent less per-pupil on textbooks than did the poorest districts).

The wealthy districts outspent the poor ones for administration nearly three to two. This was the result of more administrative personnel and higher salaries. District wealth did not significantly affect teacher salaries. While the wealth districts paid more they also had a greater ability to pay and the higher cost of living in these districts tended to render the spread in actual income to a negligible amount. (This statement was generally true for administration salaries as well.)[20]

In an effort to pursue the topic of quality, School Management[21] undertook the analysis of the spending patterns of school districts which were in the top 25 percent according to net current expenditures per-pupil. These schools were called the "Quality Quarter". It was pointed out that while Net Current Expenditures per-pupil is a "good" measure of school quality, it is not perfect and that inclusion in the "Quality Quarter" is not an automatic guarantee of quality education. A look at some of the financial factors and analysis reveal that:

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[20] Ibid.

[21] "What the Cost of Education Means to Your Schools", School Management, 10:110 (January, 1966).

1. Quality Quarter districts spend considerably more on instruction but devote a lesser percentage of their total budget to this item.

2. Quality Quarter districts hire more clerks, custodians and janitors, as well as teachers and administrators.

3. Quality Quarter districts are able to retain their professional people for longer periods by giving higher salaries and lowering pupil loads.

The above factors can be partly accounted for by larger expenditures by districts; however, less than one-third of the Quality Quarter schools are in the wealthiest group and some districts in every wealth level appear in the Quality Quarter. Compared to the national average for effort of 1.12%, the average effort of these schools was 1.34%. (Quality Quarter districts were raising on an average, an extra twenty-two cents on each $100 true valuation.)

A study analyzing expenditures and taxing inequalities in nine states including Hawaii, Delaware, North Carolina, Washington, California, Michigan, New York, New Hampshire, and Colorado reported some comparisons or per-pupil expenditures by function.[22] The principal findings showed that:

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[22]Betsy Levin, "An Analysis of the Expenditure and Taxing Inequalities in Nine States", National Conference on School Finance (Washington, D. C.: National Education Association, March, 1972).

1. Differences in local revenue among school districts are the primary cause for interstate differentials. 2. Central cities generally have higher total per-pupil expenditures, and sharp differences exist among suburban districts. Rural areas spend less, primarily because of differences in salaries for instructional personnel, greater pupil-teacher ratios, a lower proportion of teachers with advanced degrees, and lower plant operation and maintenance costs. In general, similarities were shown in the education finance characteristics by type of district across states, however, every state showed some unique features.

A 1963 study by James, Thomas and Dyck showed evidence of the effect of wealth on expenditure.[23] The effects of a number of variables on current expenditure per-pupil in average daily attendance were measured in fifteen sample school districts drawn from ten states. The variables studied included equalized property value per resident pupil in average daily attendance, and the median family income.

A positive influence for property values on educational expenditures were confirmed on the basis of positive

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[23]H. Thomas James, J. Alan Thomas, and Harold J. Dyck, Wealth Expenditures and Decision-Making for Education (Stanford, University, 1963).

coefficients in all fifteen samples. The median family income was found to have a positive influence on expenditures in all of the samples but one, again supporting the notion that variations in expenditures per-pupil or per-classroom is systematically related to the wealth of the school district community.

A number of studies were published in 1968 as part of a five-volume series dealing with school finance. Entitled, "The National Educational Finance Project" this three-year project included data from all fifty states and was financed by funds provided under the Elementary and Secondary Education Act of 1965 (Public Law 89-10, Title V, Sec. 505) and sponsoring States.

The first volume of the series[24] included studies analyzing the dimensions or parameters of educational need in the following program areas: pre-first grade education, basis elementary and secondary education, compensatory education, exceptional children education, vocational and technical education, adult and continuing education, and community junior college education.

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[24]Roe L. Johns, Kern Alexander, and Richard Rossmiller, Editors, "Dimensions of Educational Need", National Educational Finance Project, Vol. 1 (Gainesville: 1969).

Generally, the studies reported in the first volume, Dimensions of Educational Need, emphasize the need for further data to derive reliable estimates of cost differentials. With data on effectiveness being subject to so much uncertainty because of the many variables involved, cost-effectiveness data for differing programs or strategies to achieve a given goal are not available.

Factors which affect the financing of education are covered in the eleven chapters of the second volume.[25] A number of these factors are suggested. The effects of different levels of expenditure on educational output are discussed at some length. Efficiency in schools is explored in terms of differences in managerial skills, discretionary control, information and incentives. Using the thesis that educational managers lack the discretionary control, the information, and the incentives to maximize educational output, massive operational inefficiencies are to be expected.

Cost Input-Output Studies

In addition to cost-effectiveness studies a number of studies have been conducted focusing on financial inputs and

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[25]Roe L. Johns, Project Director, "Economic Factors Affecting the Financing of Education", National Educational Finance Report, Vol. 2 (Gainesville: 1970).

pupil achievement. Early studies conducted in Pennsylvania school districts by Mort and Cornell revealed that two-thirds of the variation in the adequacy or quality of school services could be explained by the characteristics of the community and its population.[26]

Following the theory that increased expenditures yield increased pupil outputs, modest local and state monies followed by massive federal dollars through Title I of the Elementary and Secondary Education Act were made to reduce or eliminate the academic plight of low-income and ghetto children. The Coleman report[27] and other more limited studies were summarized by Weinberg[28] with the following general thrust: Despite high costs, the yield of compensatory type educational programs is slight when applied to groups of children from predominately lower socio-economic environments.

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[26]Paul R. Mort and Francis G. Cornell, American Schools in Transition (New York: Teachers College, Columbia University, 1941), pp. 546.

[27]James S. Coleman and others, Equality of Educational Opportunity (Washington, D. C.: U. S. Department of Health, Education, and Welfare, Office of Education, Government Printing Office, 1966), p. 737.

[28]Meyer Weinberg, Desegregation Research: An Appraisal, (Bloomington, Indiana: Phi Delta Kappa, 1968), p. 314.

Some cautions on the Coleman findings were also noted.[29] Specific criticisms were made regarding the kinds of tests administered and the way they were administered, the definition of school "effectiveness", the sample used and the reliability of the data.

An article by Christopher Lasch's[30] in The New York Review supports the position of socioeconomic influences being primary factors in determining educational outcomes. Lasch reviews the Jencks,[31] et. al. position which points out that schooling does almost nothing to equalize the distribution of cognitive skills. In general, "the character of a school's output depends largely on a single input, namely the characteristics of its entering children. Everything else - the school budget, its policies, the characteristics of the teachers - is either secondary or completely irrelevant".

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[29]James W. Guthrie, "What the Coleman Reanalysis Didn't Tell Us", Saturday Review, 30:45 (July, 1972).

[30]Christopher Lasch, "Inequality and Education", The New York Review (May 17, 1973), p. 19.

[31]Christopher Jencks, et. al. A Reassessment of the Effects of Family on Schooling in America (New York: Basic Books, 1972).

Bane[32] and Jencks continue the assault on the minuscule effects of equalizing school quality within the present economic environment in Saturday Review. The perceived solution outlined for politically controlling economic institutions that shape out society would embrace socialism.

A study was conducted by Jantze[33] to determine if academic achievement was related to size of school enrollment, current expenditures per-pupil and accreditation by the Nebraska State Department of Public Instruction.

The conclusions based upon findings for this study were as follows:

1. Scholastic achievement in the basic school subjects is significantly greater in the two higher accreditation classifications than in the two lower accreditation classifications.

2. Scholastic achievement in the basic school subjects is greater when per-pupil expenditures are the greatest except in some cases where small enrollment results in higher per-pupil costs.

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[32]Mary Jo Bane and Christopher Jencks, "The Schools and Equal Opportunity", Saturday Review (September, 1972), pp. 37 - 42.

[33]Ralph Dale Jantze, An Analysis of the Relationship of Accreditation, Finance and Size of Nebraska High Schools to Scholastic Achievement (The University of Nebraska Teachers College, Unpublished dissertation, 1961).

3. Scholastic achievement in the basic school subjects within the limits of the sample increases as enrollment increases up to a point, somewhere between an enrollment of 400-799 and then decreases.

A 1962 study by Thomas dealt with the effect of levels of resource input, the manner in which resources are allocated within the organization, and the way in which goods and services are combined on differences in mean levels of achievement among high schools.[34]

Related findings by Thomas conclude that:

1. The postulated relationship between the level of resource inputs and mean test score does exist; however, the relationship is due in part to the socioeconomic level of the community.

2. The manner in which money was spent appeared to be more important than the level of expenditure.

3. The level of beginning salaries, the number of books in the library, and the experience of teachers were important predictors of one or more of the sub-scores.

4. Input-output studies can contribute to increased efficiency in the conduct of the educational enterprise.

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[34]J. Alan Thomas, "Efficiency in Education: An Empirical Study", Administrator's Notebook (Chicago: University of Chicago Press, Vol. XI, No. 2, October, 1962).

In a 1972 study dealing with educational costs and achievement, Brown[35] attempts to answer three questions which he asserts will aid in the determination of the nature of public school education and the role that schools have in its production.

> 1. What is the extent to which cognitive achievement can be identified as a goal and desired output of schools?
>
> 2. What behavioral characteristics are displayed by school districts in the attainment of their goals i. e. achievement or some broader unspecified socialization function?
>
> 3. How do these characteristics of school districts vary as a function of geographical region and community type?

These questions were approached by constructing a model of school district behavior and then estimating this behavior with recent data from over 500 Michigan K-12 school districts.

By assuming that educational quality and cognitive achievement are synonymous, estimates of the input and output demand functions as well as the production and cost functions lead to three general conclusions: 1. Traditional educational input measures are unrelated to achievement and further, achievement is rejected as an output valued by school districts. 2. Socioeconomic status (SES) and the level

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[35]Byron W. Brown, "Achievement, Costs, and the Demand for Public Education", Western Economic Journal, 10:198-219 (June, 1972).

of resources are the most important and reliable predictors of district behavior. 3. Important differences emerge among various types of school districts. Cities are inefficient producers of achievement, demand lower class size and more teachers with advanced degrees. Rural districts appear most efficient in the production of achievement.

The theoretical model developed uses composite achievement as the variable in three equations: The production function, the cost function, and the reduced form demand for output.

Data were analyzed from the results of a state-wide assessment program. More than 500 school districts in Michigan were classified into four community types; Cities, Urban fringe, Towns, and Rural. In performance on the achievement tests, towns were highest, closely followed by suburban districts. Cities were lowest. The SES measure put rural districts at the bottom of the scale, suburbs at the top. Cities have the highest amounts of local revenue per pupil, state equalized valuation of property per pupil, instructional expense, teacher salaries, and percent teachers with masters' degrees of any community type. Rural districts are the lowest in each of these categories.

The results of Brown's study showed that no consistent reliable effects exist between output and the measured inputs of class size and teacher qualifications. In support of the Coleman studies[36] SES is found to be the most important factor in the production of achievement. Wealth, socio-economic status and community type emerge as the consistently most important determinants of school district behavior. Wealthier, higher class school districts demand more of the educational inputs, and tend to contribute most financially to education; however, traditional measures of cognitive achievement as indexes of school output are rejected.

Rather, cognitive achievement or school outputs are related to the socioeconomic level of the school community, or pupil inputs. The homes and communities that provide much academic exposure and place high values on education tend to produce pupils that achieve well. And conversely, areas where home and community surroundings place little emphasis on education and provide few sources by which children gain cognitive skills tend to include pupils

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[36]James Coleman, et. al., Equality of Educational Opportunity (Washington, D. C., 1966).

accordingly. Simply spending more money per-pupil by employing a higher-paid professional staff makes little difference in student achievement levels.

The effects of higher school expenditures on the educational attainment of disadvantaged children were reported in a study by Thomas Ribich.[37] In that study, Ribich concluded that "low status boys in higher expenditure schools do accumulate more knowledge than their counterparts in low expenditure schools". It was noted that much of the increased expenditure was due to higher costs for a constant level of school services.

The apparent effect of additional expenditures on achievement was studied by Kiesling.[38] The reported findings supported the position that additional expenditures seem to have a greater impact on pupil achievement at low expenditure levels than at high ones. The effects of these additional expenditures on achievement varied according to the level of the expenditure, socioeconomic level of the student and the type and size of the school district.

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[37]Thomas I. Ribich, Education and Poverty (Washington, D. C.: The Brookings Institution, 1968).

[38]Herbert J. Kiesling, "Measuring a Local Government Service: A Study of School Districts in New York State", Review of Economics and Statistics, XLIX, 3 (New York: August, 1967).

## Studies Relating To Educational Services

### Testing

School testing practices as reported in a study conducted by the Bureau of School Services, The University of Michigan, indicated that eighty-eight percent of the school districts reporting (the sample included all K-12 school districts in Michigan) had an organized program of testing. The study also included some comparisons of test usage and school district characteristics. The results showed a significant difference with respect to reporting data to parents and community groups. Additionally, individual parent conferences, but no pupil conferences, are related to district size and character.[39]

As is true in most of the studies reviewed, a strong need is emphasized for more comprehensive research in the areas of school services.

### Health

The school health services provided by public schools appears to have some basic functions existent in most districts,

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[39]William L. Schmalgemeier, and Richard Watson, Michigan Schools: The Organization and Management of Their Testing Programs (Ann Arbor, Michigan: Bureau of School Services, The University of Michigan, 1970), p. 41.

such as preschool clinics and vision and hearing screening, and at the same time possess some unique features that may or may not be related to cost factors.

In a monograph entitled School Health Services,[40] a means of evaluation of school health services is proposed by the Massachusetts School Health Counseil, but it makes no reference to related costs. A self-study questionnaire is developed for the use of a particular school system and groups questions under ten headings:[41]

1. Administration and Coordination of the School Health Program.
2. School Health Services.
3. The Contribution and Functions of the School Nurse.
4. Dental Health.
5. Physically Handicapped and Mentally Retarded Children.
6. School Mental Health Programs.
7. Healthful School Environment.
8. Health Instruction.

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[40]Charles C. Wilson, School Health Services (Washington, D. C.: National Education Association and the American Medical Association, 1964), p. 349.

[41]Administrator's Self-Evaluation Study of the School Health Program (Boston, Massachusetts: Massachusetts School Health Council, Department of Education, Mental Health, and Public Health, 1959), pp. 24.

9. Nutrition Education and the School Lunch.

10. Contributions of Physical Education and Safety Education.

Transportation

The selection of criteria by which the effectiveness of a school transportation system can be evaluated appears to be a major problem. Recognizing this inherent difficulty, the transportation service becomes an item of concern primarily as it relates to the demographic characteristics of a school district.

A study by Boyer reported the following: "Transportation systems may be evaluated by simply comparing the costs per student mile or costs per bus mile. It was found that both costs tended to be more dependent upon population density, area, and sizes of buses than on the efficiency of the routes. The cost per bus mile and student mile were found to be relatively low for a school district that was small with excellent roads and a large population. On the other hand, both costs would be far greater in rural consolidated school districts that had a low density of population, poor roads and the necessity of transporting students over long distances."[42]

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[42]Roscoe A. Boyer, The Use of Mathematical Programming to Solve Certain Problems in Public School Transportation (Washington, D. C.: A Cooperative Research Project of the U. S. Office of Education and the School of Education, University of Mississippi, 1961), p. 17.

Summer School

A survey of Michigan schools in 1967 revealed that 52% conducted some type of summer school program.[43] This figure does not reflect the extent of course offerings. The studied programs were funded by local tax funds of varying amounts and, in many instances, federal funds. In some schools, tuition fees were levied. Most school districts reported that there were sufficient funds to optimally carry out the program. There is no data relative to expenditure analysis information.

Although the need for summer school funds is discussed, the study does not relate this to school wealth per se. While some need for federal funding is emphasized, considerable discussion centered around priorities for inner-city and rural districts where summer school needs are perceived to be the greatest. Better use of physical facilities was also stressed.

Another report of the Michigan Department of Education

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[43] TOPS: Teen-age Opportunity Programs in Summer, (Lansing, Michigan: National TOPS Conference Report, Michigan Department of Education, 1967), pp. 31-37.

revealed that 19% of the summer programs were financed by student fees.[44] A combination of local funds and student fees were used by 21% of the districts, 12% were supported entirely by local sources and 17% used a combination of local, state and private foundation funds.

Five divisions of school district community-types were used in the study: 1. Rural farm, 2. Rural non-farm, 3. Metropolitan central city, 4. Metropolitan non-central city, and 5. Other urban. No specific breakdown of funding pattern according to the above classifications is reported.

Attendance

Some per-pupil expenditures for attendance were reported by city size in a study on compulsory attendance.[45] It was estimated that in 1932, expenditures for attendance services exceeded 5½ million dollars in the United States. The per-pupil expenditure by city size was reported to be as follows:

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[44] A Six State Study Report by TOPS (Lansing, Michigan: Michigan Department of Education, 1967), pp. 20-40.

[45] W. S. Deffenbaugh and W. W. Keesecker, "Compulsory Attendance Laws and Their Administration", U. S. Bureau of Education Bulletins, No. 4 (Washington, D. C.: 1935), pp. 42-43.

| City Size | Expenditure/ Pupil Attendance |
|---|---|
| 1,000,000 or more | $ .85 |
| 500,000 - 1,000,000 | .67 |
| 100,000 - 500,000 | .43 |
| 30,000 - 100,000 | .36 |
| 10,000 - 30,000 | .31 |

The study concludes that larger cities have higher per pupil costs because:

1. Problems of attendance may be greater in larger cities.
2. Problems of attendance may be taken more seriously in larger cities.
3. Salaries of employees is generally higher in larger cities.

The presumption is also made that if data were available for smaller cities and towns, per-pupil costs would be "far less than the .31 reported for the 10,000 - 30,000 cities".

The educational service defined as attendance includes two functions. One, the accounting function or monitoring student numbers and two, the legal function which includes encouraging students to attend school on a regular and consecutive basis. The second function has primary consideration for this study.

Adult Education

A study implying some cost-benefit for adult education was conducted in Los Angeles.[46] It was reported that adult education represented about two to three percent of the school district budget and that the programs offered through adult education obtain greater returns per dollar spent. Comparative expenditures per student were reported by level as: Junior College - $365.44; Senior High School - $349.82; and Adult Education - $223.23.

Adult education as an educational service appears crictically important in school administration when national figures are considered. "There are over 16,000,000 elderly persons in the United States who are retiring earlier and living longer than their forebears. (Every 20 second some American reaches age 65.) Another reason for the upsurge in adult education is our shorter working day, resulting in increased time for leisure. There are 8,000,000 "functional" illiterates in the United States; one-half of all adult

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[46]Burton R. Clark, Adult Education in Transition, Los Angeles, California: University of California Press, 1956).

Americans have not finished high school; and one million more young people are dropping out - or being pushed out - each year."[47]

## Summary

A number of early studies dealing with school district expenditures and measurable outputs reported positive relationships between the expenditure levels and corresponding outcomes. This relationship appears to be strong in areas of school district wealth and staff characteristics (including teacher qualifications, salaries, and class size) and supports a corresponding corollary that school districts with more or higher financial support potential also spend more annually per-pupil. However, more recent studies indicate that school district outcomes (student achievement) are most closely related to the socioeconomic status of the district. These studies report inverse relationships between pay-inputs of lower class size and more qualified teachers and the outcome student achievement.

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[47]Lloyd L. Turner, "Promoting a Better Understanding of Education", Partnership in School Finance (Chicago: Proccedings of the Ninth Annual National Conference on School Finance, 1966).

A number of unrelated studies dealing with more specific educational service areas suggest some relationship between the amount of money spent on the service and the extent of the service; however, frequent reference is made to the exogenous kinds of factors that may influence the service area, extent, or quality.

In very general terms, it appears that relative wealth, socioeconomic status and community type (size) are the most important determinants of a school district's educational services. A school district's relative wealth enables it to enjoy the kinds of inputs (staff characteristics) it desires, but the product outcomes (student achievement) are more directly related to the socioeconomic status of the district.

# CHAPTER III

## INSTRUMENTATION AND METHODOLOGY OF THE STUDY

### Selection Of School Districts For Study

The 529 Michigan K-12 school districts constituted the initial population of interest for this investigation. The Detroit City school district was excluded from the study due to its disproportionate size and atypical characteristics compared to other state school districts. In an effort to emphasize the combined effects of the four cost-related indicators of support potential (CRISP) under consideration, the selection of school districts for investigation was accomplished by determining the quartile rank of the remaining 528 districts on each CRISP of interest, namely size, ability, expenditure, and effort.

The criteria for inclusion in the present study was based on these quartile rankings. School districts were placed into one of four CRISP groups according to the following procedure. Group I included districts ranking in the first quartile on at least three of the factors and ranking in the second quartile on the factor for which the district was not in the first quartile. Similarly,

Group IV districts were those ranking in the fourth quartile on at least three of the factors and ranking in the third quartile on the fourth factor if not in the fourth quartile on all four factors. Groups II and III included those districts ranking in the second and third quartiles respectively on at least three of the four factors, allowing incursion either way into an adjacent quartile on one of the factors.

Table 1 depicts the four groups as a function of the selection criteria and indicates the number of Michigan school districts in each group. Tables 2 through 5 display the ranges within each group for cost-related indicators of support potential (CRISP).

The size comparison table (Table 2) shows a range of nearly 42,000 students in the top CRISP group with a mean of 10,710 pupils, or about 7,700 more pupils than the mean of CRISP group III. In addition, the mean and median spread for CRISP group IV school districts would indicate that a few very large school districts account for the high average.

Table 3, showing state equalized valuation per pupil reports nearly $26,000 in CRISP group IV and $10,334 in CRISP group I, or more than $15,000 difference on an average between the groups. These compare with a state-wide average of $18,667 for all K-12 school districts in Michigan in 1972-73.

Per pupil expenditures (Table 4) in 1972-73 ranged from a high in CRISP group IV of $1,647 to a low of $740 in CRISP group I for a difference of nearly $1,000. The mean expenditure comparison between the highest CRISP group and the lowest showed a differential in excess of $700 per pupil. The average spent for all K-12 school districts in Michigan in 1972-73 was approximately $926.

Table 1: Selection Criteria for the Cost-Related Indicators of Support Potential (CRISP)

| Group | Conditions for Selection | Number of Districts |
|---|---|---|
| IV Highest Financial Support | 1. Rank in the fourth quartile on each of the factors.<br>2. Rank in the fourth quartile on any three CRISP factors while ranking in the third quartile on the remaining factor. | 60 |
| III | 1. Rank in the third quartile on each of the factors.<br>2. Rank in the third quartile on any three factors while ranking in the fourth quartile or the second quartile on the remaining CRISP factor | 28 |
| II | 1. Rank in the second quartile on each of the factors.<br>2. Rank in the second quartile on any three factors while ranking no higher than the third quartile or in the first quartile on the remaining factor. | 31 |
| I Lowest Financial Support | 1. Rank in the first quartile on each of the CRISP factors.<br>2. Rank in the first quartile on any three factors while ranking no higher than the second quartile on the remaining factor. | 34 |
| | Total | 153 |

Table 2: Size Comparisons of the Study School Districts According to CRISP Group

| CRISP Group | Range (pupils) | Mean | Median |
|---|---|---|---|
| Group IV | 2,148 - 44,642 | 10,710 | 7,320 |
| Group III | 1,286 - 9,614 | 3,054 | 2,898 |
| Group II | 369 - 2,822 | 1,652 | 1,746 |
| Group I | 249 - 2,066 | 1,093 | 1,069 |

Table 3: Ability (SEV) Comparisons of the Study School Districts According to CRISP Group

| CRISP Group | Range (dollars) | Mean | Median |
|---|---|---|---|
| Group IV | $16,658 - $50,393 | $25,911 | $24,500 |
| Group III | 13,461 - 36,393 | 18,889 | 18,151 |
| Group II | 11,303 - 20,793 | 14,867 | 14,663 |
| Group I | 5,942 - 15,178 | 10,334 | 10,340 |

Table 4: Per Pupil Expenditure Comparisons of the Study School Districts According to CRISP Group

| CRISP Group | Range (dollars) | Mean | Median |
|---|---|---|---|
| Group IV | $ 994 - $ 1,647 | $ 1,159 | $ 1,119 |
| Group III | 871 - 1,035 | 936 | 936 |
| Group II | 843 - 955 | 877 | 879 |
| Group I | 740 - 907 | 822 | 825 |

Table 5: Effort (Operational Mills Levied) of the Study School Districts According to CRISP Group

| CRISP Group | Range (Mills) | Mean | Median |
|---|---|---|---|
| Group IV | 21.13 - 36.90 | 28.89 | 28.87 |
| Group III | 20.00 - 25.15 | 23.61 | 23.37 |
| Group II | 17.65 - 24.40 | 21.18 | 21.05 |
| Group I | 13.20 - 21.00 | 17.65 | 17.89 |

The mills levied for operational purposes (Table 5) showed the mean and the median for school districts within the CRISP groups to be quite comparable suggesting a fairly normal distribution. The average millage levy for all K-12 districts in 1972-73 was 22.63.

Determination Of Cost-Related Indicators Of Support Potential

The determination of using cost-related factors (CRISP) as a composite indicator of a school district's relative wealth was predicated upon previous reports and studies that have used these or similar factors and the ostensible validity of a school district's size (student membership), effort (mills levied for operation), wealth (SEV/pupil), and expenditure or ability (dollars spent per pupil per year) as representing indicators of support potential.

A number of studies using the selected cost factors have been made at Michigan State University.[48] With some variations, selected cost-related factors have been used by

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[48]For one example see: Owen Springer, A Study of the Relationships Between the Educational Characteristics Criterion, The Stanford Achievement Test, and Selected Cost Factors, Unpublished Doctoral Thesis, Michigan State University, East Lansing, Michigan, 1964.

educational researchers studying school district expenditures since the 1930's.[49] For the purpose of this study, it was determined that all four factors were important considerations in school district support potential.

Selection Of Educational Service Items

General educational service areas were reviewed in terms of the overall school program. Basic components and integral functions of each of the defined service areas were considered. Some educational service areas are established as separate financial categories in school district accounting and were used in item selection. Although the educational services used in this study have been defined previously, some factors that contribute to the composition of the services are outlined here.

The appropriateness of using the selected services as priorities over which the local school district board of education exercised control was pursued by discussing each function with a number of knowledgeable individuals

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[49]Mort, loc. cit.

including consultants from the Michigan Department of Education who had primary job responsibility in the corresponding service area. Subsequent discussions with these people together with economic considerations (in terms of both time and money) resulted in the selection of certain educational services and for the purpose of this study, are being operationally defined by items which were judged appropriate. These items and the data source for each are as follows:

A. Items Defining The Educational Service "Teaching"

1. Average teachers salary from the 1972-73 Michigan Educational Assessment Program (MEAP)
2. Percent of teachers with MA degrees from (MEAP)
3. Number of teachers per 1000 pupils from (MEAP)
4. Average number of years of experience for teachers from (MEAP)

B. Items Defining The Educational Service "Administration"

1. Superintendents salary
2. Years experience of superintendent
3. Academic degree of superintendent
4. Average salary for secondary principal
5. Average years of experience for secondary principal
6. Average salary for elementary principals
7. Average years of experience for elementary principals

All data were taken from the Michigan Department of Education Certified Personnel Register (CPR)

C. Items Defining The Educational Service "Guidance And Counseling"

1. Average salary for guidance and counseling personnel (CPR)

2. Average number of years of experience for guidance and counseling personnel (CPR)

3. Average academic degree for guidance and counseling personnel (CPR)

4. Number of guidance and counseling personnel per 1,000 pupils (CPR)

5. Expenditure per pupil for guidance and counseling Data file on the annual school district financial report (SDFR)

D. Items Defining The Educational Service "Testing"

1. Number of standardized tests administered in terms of grades

2. Scoring method in terms of hand scored versus machine scored

3. Use made of test results in terms of the extent to which tests are used in educational planning

All data for "Testing" were derived from a mailed Survey Form (ESS) See Appendix B.

E. Items Defining The Educational Service "Health"

1. Health services provided from ESS

2. Expenditure per pupil for health SDFR

3. Percent of General Fund spent for health SDFR

F. Items Defining The Educational Service "Library"

1. Librarians average salary from CPR
2. Librarians average academic degree from CPR
3. Librarians average years of experience from CPR
4. Librarians per 1000 pupils from CPR
5. Expenditure per pupil for library services from SDFR

G. Items Defining The Educational Service "Curriculum Consultants"

1. Consultants average salary from CPR
2. Consultants average academic degree from CPR
3. Consultants average years experience from CPR
4. Consultants per 1000 pupils from CPR
5. Expenditure per pupil for curriculum consultants from SDFR

H. Items Defining The Educational Service "Adult Education"

1. Expenditure per pupil for adult education from SDFR
2. Percent of General Fund spent for adult education from SDFR

I. Items Defining The Educational Service "Summer School"

1. Expenditure per pupil for summer school from SDFR
2. Percent of General Fund spent for summer school from SDFR

J. Items Defining The Educational Service "Transportation"

1. Expenditure per pupil for transportation from SDFR

2. Percent of General Fund spent for transportation from SDFR

K. Items Defining The Educational Service "Attendance"

1. Expenditure per pupil for attendance from SDFR

2. Percent of General Fund spent for attendance from SDFR

It will be noted that the items which define the latter four educational services are exclusively expenditure items whereas the other services are defined by other than just expenditure items. The explanation for this is that these services, according to expert sources, do not lend themselves to objective and discriminate measurement by other readily available items of interest to this study. This, resulted in the decision to utilize the limited items for the last four educational services.

Mailing Of Survey Instrument

In reviewing the educational services items that were outlined previously, a need for additional information to be derived directly from the sampled school districts became apparent. Although much school district financial and personnel information is compiled in data files at the Michigan Department of Education, it was necessary to survey the sampled school districts relative to certain items not collected on regular reporting forms.

Superintendents at all 153 school districts in the CRISP groups were mailed a cover letter (Appendix A), the survey forms (Appendix B) accompanied by a self-addressed stamped envelope. In addition, the Executive Secretary of the Michigan Association of School Administrators wrote an accompanying note urging cooperation in the survey response (Appendix C).

The survey returns netted over 85 percent, were tabulated by a numerical counting procedure and assigned to the appropriate CRISP group. Specific information was gained on school health services, the school district testing program, including scoring methods and uses made of test results. (See Appendix B)

Treatment Of The Data

Data for the educational services were taken directly from the data files by means of computer program-selection and combined with information obtained from the survey form to provide an educational services inventory (ESI) for each of the school districts included in the CRISP groups.

The data were then transferred to Michigan State University Fortran Computer forms and subsequently processed

or "punched" into standard computer cards in preparation for tabulation and analyses.

All of the data gathered for one school district were "punched" on three (3) eighty column computer cards prior to analyses by the computer at the Michigan State University Computer Center.

A computer program entitled "Univariate and Multivariate Analysis of Variance, Covariance and Regression, Version 4, June , 1968" was used to test for significant differences in the educational service items between the CRISP groups.

Scheffé Post Hoc comparisons were made where a significant F was obtained to determine which of the CRISP group differences contributed to the significant F.

## Statistical Methodology

The one-way analysis of variance with fixed effects was chosen as the appropriate statistical procedure for this study. The choice of this selection method was mediated by a desire to generate four distinct groups of school districts in terms of the combined effects of the cost-related indicators of support potential.

The assumption that the CRISP groups are unique appears to be valid on the basis of the observed differences among the mean of the factors. In an effort to utilize the available data maximally, all school districts meeting the grouping criteria were included in the study. This procedure resulted in an unequal number of districts in the four groups. This did not appear to be a serious problem since the proposed statistical treatment (ANOVA) does not require that N be equal for each of the J groups.[50]

The percentage of school districts in each CRISP group providing the various educational services was computed. These percentages (excluding those educational services provided by all of the study schools) were presented in tabular form and interpreted informally.

The data were also reported graphically utilizing the standard error of the mean to establish confidence limits of .9544 percent. Each band was plotted as two standard errors around the mean. An overlapping of bands would indicate no significant difference.

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[50]Gene V. Glass and Julian C. Stanley, Statistical Methods in Education and Psychology, (Englewood Cliffs, New Jersey, Prentice-Hall, Inc. 1970), p. 362.

Hypotheses Testing

From the scores derived for each of the forty educational service variables, a one-way analysis of variance with fixed effects statistical treatment was used to test for differences between the four CRISP groups as well as a composite score over all services between CRISP groups. Each of the hypotheses to be tested is expressed in word statement followed by the symbolic statement. For the purpose of this symbolic statement, the CRISP groups means are denoted by the following legend: $Q_1$ = CRISP group I school districts; $Q_2$ = CRISP group II school districts; $Q_3$ = CRISP group III school districts; $Q_4$ = CRISP group IV school districts.

(1) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "average teachers salary".

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average teachers salary"

(2) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "percent of teachers with MA degrees"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of teachers with MA degrees"

(3) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "number of teachers per 1000 pupils"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "number of teachers per 1000 pupils"

(4) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "average years of experience for teachers"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average years of experience for teachers"

(5) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "superintendents salary"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "superintendents salary"

(6) Null hypothesis: No difference will be found between CRISP groups and the number of educational services defined as "years of experience of superintendent"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "years of experience of superintendent"

(7) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "academic degree of superintendent"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "academic degree of superintendent"

(8) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "average salary for secondary principal"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average salary for secondary principal"

(9) Null hypothesis: No difference will be found between CRISP groups and the number of educational services defined as "average years experience for secondary principal"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average years experience for secondary principal"

(10) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "average salary for elementary principal"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average salary for elementary principal"

(11) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "average years experience for elementary principal"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average years experience for elementary principal"

(12) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "average salary for guidance and counseling personnel"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average salary for guidance and counseling personnel"

(13) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "average years of experience for guidance and counseling personnel"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average years of experience for guidance and counseling personnel"

(14) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "average academic degree for guidance and counseling personnel"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average academic degree for guidance and counseling personnel"

(15) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "number of guidance and counseling personnel per 1000 pupils"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "number of guidance and counseling personnel per 1000 pupils"

(16) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for guidance and counseling"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for guidance and counseling"

(17) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "number of standardized tests administered in terms of grades:

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "number of standardized tests administered in terms of grades"

(18) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "scoring method in terms of hand scored versus machine scored"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "scoring method in terms of hand scored versus machine scored"

(19) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "use made of test results in terms of the extent to which tests are used in educational planning"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "use made of test results in terms of the extent to which tests are used in educational planning"

(20) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "health services provided"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "health services provided"

(21) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for health"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for health"

(22) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for health"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for health"

(23) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "librarians average salary"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "librarians average salary"

(24) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "librarians average academic degree"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "librarians average academic degree"

(25) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "librarians average years of experience"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "librarians average years of experience"

(26) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as librarians per 1000 pupils"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "librarians per 1000 pupils"

(27) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for library services"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for library services"

(28) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "consultants average salary"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "consultants average salary"

(29) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "consultants average academic degree"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "consultants average salary"

(30) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "consultants average years experience"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "consultants average years experience"

(31) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "consultants per 1000 pupils"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "consultants per 1000 pupils"

(32) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for curriculum consultants"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for curriculum consultants"

(33) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for adult education"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for adult education"

(34) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for adult education"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for adult education"

(35) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for summer school"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for summer school"

(36) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for summer school:

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for summer school"

(37) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for transportation"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for transportation"

(38) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for transportation"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for transportation"

(39) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "expenditure per pupil for attendance"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for attendance"

(40) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "percent of General Fund spent for attendance"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for attendance"

(41) Null hypothesis: No difference will be found between the CRISP groups and the number of educational services defined as "total number of educational services"

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "total number of educational services"

Summary

In 1972-73 there were 529 K-12 public school districts in Michigan. For the purpose of this study, these districts were ranked into quartile groups according to the following four cost-related indicators of support potential: 1. size, 2. wealth, 3. effort, and 4. ability. (These indicators were deemed appropriate and used because of their use in a number of previous studies.) From the 528 districts, (Detroit was excluded) 153 school districts were used in the sample because of their consistent ranking in one of the quartile groups.

Ten educational services were selected that represent a distinct part of a four-part conceptualized model for a total school program. The extent or degree to which these services were provided in the 153 school districts was measured according to forty items. The scores or information for the measurement were obtained from data files maintained by the Michigan Department of Education and a survey completed by the school district administration.

Data obtained for each of the sampled school districts were processed "punched" on computer cards and analyzed by a computer program for a one-way analysis of variance with fixed effects to test for differences in the number of educational services that are provided by the four quartiled-groups of school districts.

# CHAPTER IV

## ANALYSIS OF THE DATA

This chapter has been divided into three sections. The first section presents the statistical results of hypotheses testing for the eleven educational services defined in this investigation and offers discussion of these results.

The second section reports the percentage of school districts by CRISP group providing those educational services which were not offered in all of the study school districts.

The third section displays the educational service items in graphic form according to like data.

### Statistical Results Of Hypotheses Testing

For each of the statistical tests, the hypotheses are stated in the null form. The .05 level of significance is used to define the probability level for each test. A decision to reject the null hypotheses is made if the probability level is smaller than .05. A rejection of the null hypotheses means that the research hypotheses are accepted.

Educational Service: Teaching

Four specific questions regarding the educational service defined as teaching were asked. These questions and corresponding null hypotheses stated symbolically are as follows:

(1) Do school districts with differing support potential differ with regard to the average salary paid to the teaching staff?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average teachers salary"

(2) Do school districts with differing support potential differ with regard to the average number of years of experience for the teaching staff?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average years of experience for teachers"

(3) Do school districts with differing support potential differ with regard to the percentage of teachers with a Masters degree?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of teachers with MA degrees"

(4) Do school districts with differing support potential differ with regard to the number of teachers per 1000 pupils?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "number of teachers per 1000 pupils"

The results of the analysis of variance for each of the items defining teaching as an educational service are

summarized in Table 6. Also included in this table are the cell means for each variable according to CRISP group.

A significant difference among the CRISP groups was found for salaries, years of experience and percentage of teachers with MA degrees. No difference was found for the ratio of teachers per 1000 pupils between the CRISP groups.

In an effort to determine which groups contributed to the significant F ratios, Scheffé Post Hoc comparisons were used where appropriate. The results of these procedures are summarized in Tables 7, 8, and 9.

Table 6: Analysis of Variance for the Dependent Variables Defining the Educational Service Teaching

| Variable | Mean Square | Univariate F | P less than |
|---|---|---|---|
| Average Salary | 75,962,853.94 | 74.2224* | .0001 |
| Years Experience | 34.33 | 8.9960* | .0001 |
| % With MA Degree | 6,279.04 | 73,1509* | .0001 |
| Teachers/1000 Pupils | 3.59 | 0.2095 | .8897 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149

Cell Means

| CRISP GROUP | Avg. Salary | Years Experience | % With MA | Teachers Per 1000 |
|---|---|---|---|---|
| I | $ 9,720 | 7.63 | 14.26 | 43.01 |
| II | 10,468 | 8.46 | 19.97 | 42.32 |
| III | 11.032 | 8.78 | 27.53 | 42.34 |
| IV | 12,712 | 9.74 | 41.19 | 42.71 |

Table 7: Differences Between All Possible Pairs of Means of Average Teachers Salary

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 748* | | |
| CRISP III | 1312* | 564 | |
| CRISP IV | 2992* | 2244* | 1680* |

*Significant at $\alpha$ = .05 Scheffé Test

On the basis of the Scheffé Method, the differences between the means of CRISP groups are all significant with the exception of the difference between CRISP group II and CRISP group III.

This would indicate that school districts with greater potential pay higher salaries to their teachers.

Table 8: Differences Between All Possible Parts of CRISP group Means for the Variable Average Years of Experience for Teachers

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | .83 | | |
| CRISP III | 1.15 | .32 | |
| CRISP IV | 2.11* | 1.28* | .96 |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé procedure indicates that all of the differences of the means of CRISP groups I, II, and III are not significant. However, differences between the mean of CRISP group IV and the means of CRISP group I and CRISP group II are significant. These differences account for the fignificant F ratio. This indicates that high support potential is related to average years of experience for teachers.

Table 9: Differences Between All Possible Pairs of CRISP Group Means for the Variable Percent of Teachers with Masters Degrees

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 5.7* | | |
| CRISP III | 13.2* | 7.5* | |
| CRISP IV | 26.9* | 21.2* | 13.7* |

*Significant at $\alpha$ = .05 Scheffé Test

The application of the Scheffé Test leads to the conclusion that differences between the means of all four CRISP groups contributed to the significant F ratio. Since the CRISP group means increase systematically from low to high support potential, it is suggested that the percentage of teachers with MA degrees is directly related to the financial support potential of school districts.

On the basis of these results, it appears that the educational service teaching, as defined in this investigation, is positively influenced by a school district's support potential.

Educational Service: Administration

Seven specific questions regarding the educational service administration were asked. These questions and the corresponding null hypotheses stated symbolically are as follows:

(1) Do school districts with differing support potential differ with regard to the salary paid to superintendents?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "superintendents salary"

(2) Do school districts with differing support potential differ with regard to the highest academic degree held by the superintendent?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "academic degree of superintendent"

(3) Do school districts with differing support potential differ with regard to the number of years of experience of the superintendent?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "years of experience of superintendent"

(4) Do school districts with differing support potential differ with regard to the average salaries paid to secondary principals?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average salary for secondary principal"

(5) Do school districts with differing support potential differ with regard to the average years of experience of the secondary principals?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average years experience for secondary principal"

(6) Do school districts with differing support potential differ with regard to the average salaries of the elementary principals?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average salary for elementary principal"

(7) Do school districts with differing support potential differ with regard to the average years of experience of elementary principals?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average years experience for elementary principal"

The results of the analysis of variance for each of the items defining administration as an educational service are summarized in Table 10. A significant difference between the CRISP groups was found for all of the defining items except years of experience of the superintendent.

To determine which CRISP groups were responsible for the significant F ratios, Scheffe Post Hoc comparisons were used. These results are summarized in Tables 11 through 16.

Table 10: Multivariate Analysis of Variance for the Dependent Variables Defining the Educational Service Administration

| Variable | Mean Square | Univariate F | P less than |
|---|---|---|---|
| Supt. Salary | 1,512,150,342.04 | 129.1081* | 0.0001 |
| Supt. Degree | 13.71 | 28.4638* | 0.0001 |
| Supt. Years Experience | 16.18 | 0.2511 | 0.8605 |
| Sec. Principal Salary | 560,305,545.78 | 129.5380* | 0.0001 |
| Sec. Principal Yrs. Experience | 287.74 | 7.9911* | 0.0001 |
| El. Principans Salary | 399,521,986.87 | 109.9944* | 0.0001 |
| El. Principals Yrs. Experience | 486.70 | 14.7138* | 0.0001 |

* Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149

Cell Means

| CRISP GROUP | Supt. Salary | Supt. Degree | Supt. Years Exp. | Sec. Princ-ipal Salary | Sec. Princ-ipal Years Exp. | El. Princ-ipal Salary | El. Prin-cipal Years Exp. |
|---|---|---|---|---|---|---|---|
| I | $18,629 | 2.09 | 21.06 | $14,644 | 13.35 | $13,153 | 11.45 |
| II | 21,682 | 2.06 | 20.58 | 17,259 | 14.07 | 15,779 | 16.71 |
| III | 24,492 | 2.46 | 20.93 | 19,177 | 16.61 | 16,649 | 15.93 |
| IV | 31,891 | 3.22 | 21.97 | 22,984 | 18.92 | 20,286 | 19.62 |

Table 11: Differences Between All Possible Pairs of CRISP Group Means for the Variable Superintendents Salary

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 3,053* | | |
| CRISP III | 5,863* | 2,810* | |
| CRISP IV | 13,262* | 10,209* | 7,399* |

*Significant at $\alpha$ = .05 Scheffé Test

The use of the Scheffé Test would support the conclusion that differences between the means of all four CRISP groups contributed to the significant F ratio. Because the CRISP group means increase systematically from low to high support potential, it is suggested that the salaries of superintendents are directly related to the financial support potential of school districts.

Table 12: Differences Between All Possible Pairs of CRISP Group Means for the Academic Degree held by the Superintendent

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP II | -.03 | | |
| CRISP III | .37 | .40 | |
| CRISP IV | 1.13* | 1.16* | .76* |

*Significant at $\alpha$ = .05 Scheffé Test

On the basis of the Scheffé Test, the conclusion is made that significant differences between the means of CRISP group I, II, and III do not exist. However, the differences between the mean of CRISP group IV and the other three means are significantly different and these differences contribute to the significant F.

This suggests that the academic degree held by the superintendent is a function of financial support potential only at the highest level CRISP group.

Table 13: Differences Between All Possible Pairs of CRISP Group Means for the Variable Secondary Principals Salary

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 2,615* | | |
| CRISP III | 4,533* | 1,918* | |
| CRISP IV | 8,340* | 5,725* | 3,807* |

*Significant at $\alpha$ = .05 Scheffé Test

The differences between the means of all four CRISP groups contributed to the significant F ratio. This conclusion is made on the basis of the Scheffé Test. As the means of the four CRISP groups increase systematically from low to high support potential, the conclusion is made that the salaries of secondary principals is directly related to the financial support potential of school districts.

Table 14: Diffenences Between All Possible Pairs of CRISP Group Means for the Variable Years of Experience for Secondary Principals

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | .72 | | |
| CRISP III | 3.26 | 2.54 | |
| CRISP IV | 5.57* | 4.85* | 2.31 |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé procedure indicates that all of the differences of the means of CRISP groups I, II and III are not significant, however, differences between the mean of CRISP group IV and the means of CRISP groups I and II are significant. These differences account for the significant F ratio. This indicates that high support potential is necessary to have an effect on the years of experience for secondary principals.

Table 15: Differences Between All Possible Pairs of CRISP Group Means for the Variable Elementary Principals Salaries

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 2,626* | | |
| CRISP III | 3,496* | 870 | |
| CRISP IV | 7,133* | 4,507* | 3,637* |

*Significant at $\alpha$ = .05 Scheffé Test

On the basis of the Scheffé method, the conclusion is made that significant differences exist between the means of all of the CRISP groups except groups II and III. This would suggest that elementary principals' salaries are a function of financial support potential.

Table 16: Differences Between All Possible Pairs of CRISP Group Means for the Variable Years of Experience for Elementary Principals

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 5.26* | | |
| CRISP III | 4.48* | -.78 | |
| CRISP IV | 8.17* | 2.91 | 3.69* |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé Test indicates that the mean of CRISP group I differs from CRISP groups II, III and IV. These differences along with the differences between the means of CRISP groups III and IV contribute to the significant F ratio. This would suggest that there is a direct relationship between support potential and years of experience for elementary principals.

These results would indicate that administration as a defined educational service is directly related to the financial support potential of school districts with the exception of the years of experience for the superintendent.

Therefore, it appears that the educational service administration as defined in this investigation is directly related to the financial support potential of school districts.

Educational Service: Guidance And Counseling

Five specific questions were asked regarding the educational service defined as guidance and counseling. These questions and the corresponding null hypotheses stated symbolically are as follows:

(1) Do school districts with differing support potential differ with regard to average salaries paid to guidance personnel?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average salary for guidance and counseling personnel"

(2) Do school districts with differing support potential differ with regard to years of experience of guidance personnel?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average years of experience for guidance and counseling personnel"

(3) Do school districts with differing support potential differ with regard to average academic degree held by guidance and counseling personnel?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "average academic degree for guidance and counseling personnel"

(4) Do school districts with differing support potential differ with regard to average expenditure per pupil for guidance and counseling?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for guidance and counseling"

(5) Do school districts with differing support potential differ with regard to the number of guidance and counseling personnel per 1000 pupils?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "number of guidance and counseling personnel per 1000 pupils"

The results of the analysis of variance for each of the items defining guidance and counseling as an educational service are summarized in Table 17. Cell means for each variable are also included for each CRISP group.

A significant difference among the CRISP groups was found for all the items defining guidance and counseling. The results of Scheffé Post Hoc comparisons for each of the items are summarized in Tables 18 through 22.

Table 17: Multivariate Analysis of Variance for the Dependent Variables Defining the Educational Service Guidance and Counseling

| Variable | Mean Squares | Univariate F | p less than |
|---|---|---|---|
| Salary | $ 483,770,891.71 | 31.3181* | 0.0001 |
| Years Experience | 470.95 | 13.8008* | 0.0001 |
| Degree | 4.37 | 10.8362* | 0.0001 |
| Expenditure/Pupil | 1,461.49 | 28.9645* | 0.0001 |
| Number/1000 | 3.82 | 14.2132* | 0.0001 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149

Cell Means

| CRISP GROUP | Salary | Years Exp. | Degree | Expenditure Per Pupil | No. Per 1000 Pupils |
|---|---|---|---|---|---|
| I | $ 7,611 | 5.92 | 1.29 | $ 7.44 | 0.68 |
| II | 9,277 | 9.82 | 1.49 | 9.93 | 0.82 |
| III | 12,516 | 11.96 | 1.92 | 16.05 | 1.22 |
| IV | 15,074 | 13.79 | 1.98 | 20.24 | 1.32 |

Table 18: Differences Between All Possible Pairs of CRISP Group Means for the Variable Average Salary for Guidance and Counseling Personnel

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 1,666 | | |
| CRISP III | 4,905* | 3,239* | |
| CRISP IV | 7,463* | 5,797* | 2,558* |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé Test indicates that the difference between the means of all possible pairs are significant except for CRISP groups I and II. This would suggest that the average salary for Guidance and Counseling personnel is a function of the financial support potential of school districts.

Table 19: Differences Between All Possible Pairs of CRISP Group Means for the Variable Years of Experience for Guidance and Counseling Personnel

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 3.90 | | |
| CRISP III | 6.04* | 2.14 | |
| CRISP IV | 7.87* | 3.97* | 1.83 |

*Significant at $\alpha$ = .05 Scheffé Test

The results of the Scheffé comparisons show that the mean of CRISP group I differs from CRISP groups III and IV. Also, the mean of CRISP group II differs from the mean of CRISP group IV. This would support the conclusion that years of experience for guidance and counseling personnel are a function of support potential at the extremes of the high and low range.

Table 20: Differences Between All Possible Pairs of CRISP Group Means for the Variable Average Academic Degree for Guidance and Counseling Personnel

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | .20 | | |
| CRISP III | .63* | .43 | |
| CRISP IV | .69* | .49* | .06 |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé comparisons show that the mean of CRISP group I differs from CRISP groups III and IV. In addition, the mean of CRISP group II differs from the mean of CRISP group IV. This would support the conclusion that the average academic degree for guidance and counseling personnel is associated with financial support potential at the extremes of the high and low range.

Table 21: Differences Between All Possible Pairs of CRISP Group Means for the Variable Expenditure Per Pupil for Guidance and Counseling

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 2.49 | | |
| CRISP III | 8.61* | 6.12* | |
| CRISP IV | 12.80* | 10.31* | 4.19 |

*Significant $\alpha$ = .05 Scheffé Test

The Scheffé Test indicates that the means of CRISP groups I and II are significantly different from the means of CRISP groups III and IV. This would indicate that expenditures for guidance and counseling are a function of support potential at extremes of the high and low range.

Table 22: Differences Between All Possible Pairs of CRISP Group Means for the Variable Number of Guidance and Counseling Personnel Per 1000 Pupils

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | .14 | | |
| CRISP III | .54* | .10* | |
| CRISP IV | .64* | .50* | .40* |

*Significant at $\alpha$ = .05 Scheffé Test

The results of the Scheffé comparisons show that the means of CRISP groups I and II differ from the means of CRISP groups III and IV. This would suggest that the number of guidance and counseling personnel per 1000 pupils associates with the financial support potential of school districts at the high and low extremes of the range.

All five of the questions concerning guidance and counseling as an educational service can be answered in the affirmative. These results would indicate that this educational service is quite strongly related to the financial support potential of the studied school districts.

Educational Service: Testing

For the educational service testing, three questions were asked. These questions and the corresponding null hypotheses stated symbolically are as follows:

(1) Do school districts with differing financial support potential differ with regard to the extent of standardized tests administered?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "number of standardized tests administered in terms of grades"

(2) Do school districts with differing financial support potential differ with regard to the method of scoring standardized tests?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "scoring method in terms of hand scored versus machine scored"

(3) Do school districts with differing financial support potential differ with regard to the use made of standardized test results?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "use made of test results in terms of the extent to which tests are used in educational planning"

The results of the analysis of variance for each of the items defining testing as an educational service are summarized in Table 23. Also included in this table are the cell means for each variable according to CRISP group.

The cell means for "scoring method" and "use made of tests" in Table 23 are obtained from ESI scores (see Appendix B). The scoring procedure assumed a higher level of service progressing down the grid so that responses were scored "1" at the lowest level and "4" at the highest level. A total score of 20 (four methods or uses for each of five tests) was possible. These were totaled and averaged for each of the CRISP group school districts.

A significant difference among the CRISP groups was found for the extent of standardized tests administered. No difference was found for the methods of scoring standardized tests or for the use made of these test results.

Table 24 displays the results of Scheffé Post Hoc comparisons applied to the extent of standardized tests administered.

Table 23: Multivariate Analysis of Variance for the Dependent Variables Defining the Educational Service Testing

| Variable | Mean Square | Univariate F | p less than |
|---|---|---|---|
| No. of Tests Administered | 52.83 | 2.8332* | 0.0412 |
| Scoring Method | 16.08 | 1.0409 | 0.3771 |
| Use Made | 4.97 | 0.2901 | 0.8325 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 121

Cell Means

| CRISP GROUP | Mean No. Tests Administered | Mean Scoring Method | Mean Use Made |
|---|---|---|---|
| I | 13.15 | 10.67 | 11.41 |
| II | 12.73 | 11.58 | 12.31 |
| III | 9.95 | 12.37 | 11.37 |
| IV | 11.15 | 12.15 | 11.55 |

Table 24: Differences Between All Possible Pairs of CRISP Group Means for the Variable Number of Tests Administered

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | -0.42 | | |
| CRISP III | -3.20* | -2.78 | |
| CRISP IV | -2.00 | -1.58 | 1.20 |

*Significant at $\alpha$ = .05 Scheffé Test

On the basis of the Scheffé Test, it is concluded that the significant F ratio is due to the difference between the means of CRISP groups I and III. This would indicate that the relationship between the number of tests administered and school district financial support potential is very weak. There appears to be some slight tendency for the low support potential school districts to administer the greater number of kinds of standardized tests.

These results indicate that very little, if any, relationship exists between the educational service testing, as defined in this investigation and the financial support potential of school districts.

Educational Service: Health

Three questions were posed regarding the educational service health. These three questions and corresponding null hypotheses, stated symbolically, are as follows:

(1) Do school districts with differing financial support potential differ with regard to the expenditure per pupil for health services?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for health"

(2) So school districts with differing financial support potential differ with regard to the percent of the general fund expended for health services?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for health"

(3) Do school districts with differing financial support potential differ with regard to the extent of health services provided pupils?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "health services provided"

The results of the analysis of variance for each of the items defining health as an educational service are summarized in Table 25. The cell means for each variable according to CRISP group are also included in this table.

Since none of the items defining the educational service health were found to be significantly different among the CRISP groups, it is concluded that the educational service health as defined in this investigation bears no relationship to the financial support potential of school districts.

Table 25: Multivariate Analysis of Variance for the Dependent Variables Defining the Educational Service Health

| Variable | Mean Square | Univariate F | p less than |
|---|---|---|---|
| Expenditure Per Pupil | 19.71 | 2.6541 | 0.0508 |
| Percent of General Fund Expenditure | 0.09 | 1.4016 | 0.2447 |
| Services Provided | 97.19 | 2.1293 | 0.1001 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149
Degrees of Freedom for Error for Services Provided= 121

Cell Means

| CRISP GROUP | Expenditure Per Pupil (dollars) | Percent General Fund Expenditure | Services Provided |
|---|---|---|---|
| I | 1.26 | 0.14 | 13.67 |
| II | 1.77 | 0.19 | 12.73 |
| III | 2.18 | 0.22 | 12.42 |
| IV | 2.83 | 0.24 | 10.02 |

Educational Service: Library

Five questions concerning the educational service library were considered in this study. These questions and the corresponding null hypotheses stated in symbolic form are as follows:

(1) Do school districts with differing support potential differ with regard to the average salary paid to librarians?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "librarians average salary"

(2) Do school districts with differing support potential differ with regard to average years of experience of librarians?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "librarians average years of experience"

(3) Do school districts with differing support potential differ with regard to the average academic degree held by librarians?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "librarians average academic degree"

(4) Do school districts with differing support potential differ with regard to the expenditure per pupil for library services?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for library services"

(5) Do school districts with differing financial support potential differ with regard to the number of librarians per 1000 pupils?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "librarians per 1000 pupils"

The results of the analysis of variance for each of the items defining library services are summarized in Table 26. In addition, cell means for each variable according to CRISP group are included in the table.

The results produce a significant F ratio for all of the defining items for the educational service library.

Tables 27 through 31 display the results of the Scheffe method for multiple comparisons.

Table 26: Multivariate Analysis of Variance for the Dependent Variable Defining the Educational Service Library

| Variable | Mean Square | Univariate F | p less than |
|---|---|---|---|
| Average Salary | 415,505,776.12 | 35.44* | 0.0001 |
| Years Experience | 261.77 | 4.8040* | 0.0032 |
| Librarians Degree | 5.55 | 23.4611* | 0.0001 |
| Expenditure Per Pupil | 379.07 | 6.7005* | 0.0003 |
| No. of Librarians Per 1000 Pupils | 0.88 | 3.0266* | 0.0315 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149

Cell Means

| CRISP GROUP | Average Salary (dollars) | Years Experience | Degree | Expenditure Per Pupil (dollars) | Number Librarians Per 1000 Pupils |
|---|---|---|---|---|---|
| I | $ 6,353 | 5.75 | 0.81 | $13.06 | 0.69 |
| II | 9,393 | 10.22 | 1.18 | 13.85 | 0.66 |
| III | 10,798 | 9.97 | 1.51 | 13.48 | 0.76 |
| IV | 13,730 | 11.72 | 1.72 | 19.01 | 0.97 |

Table 27: Differences Between All Possible Pairs of CRISP Group Means for the Variable Average Salary of Librarians

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 3,040* | | |
| CRISP III | 4,445* | 1,405 | |
| CRISP IV | 7,377* | 4,337* | 2,932* |

*Significant at $\alpha$ = .05 Scheffé Test

These results of the Scheffé test show that the differences between the means of the CRISP groups are all significant with the exception of the difference between CRISP groups II and III. This would suggest that school districts with greater support potential pay higher salaries to their librarians.

Table 28: Differences Between All Possible Pairs of CRISP Group Means for the Variable Number of Years of Experience of Librarians

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 4.47 | | |
| CRISP III | 4.22 | -0.25 | |
| CRISP IV | 5.97* | 1.50 | 1.75 |

*Significant at $\alpha$ = .05 Scheffé Test

On the basis of the Scheffé method, the significant F ratio obtained from the analysis of variance is due to the difference between the means of CRISP groups I and IV. This would suggest that years of experience of librarians is a function of support potential only when very high and very low support potential school districts are compared.

Table 29: Differences Between All Possible Pairs of CRISP Group Means for the Variable Librarian's Degree

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 0.37* | | |
| CRISP III | 0.70* | 0.33 | |
| CRISP IV | 0.91* | 0.54* | 0.21 |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé test shows that CRISP group I differs from the other three CRISP groups and that CRISP group II differs from CRISP group IV. This appears to indicate that school districts with higher support potential employ librarians with more academic training.

Table 30: Differences Between All Possible Pairs of CRISP Group Means for the Variable Expenditure Per Pupil for Library

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 0.79 | | |
| CRISP III | 0.42 | -0.37 | |
| CRISP IV | 5.95* | 5.16* | 5.53* |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé test indicates that the differences between the means of CRISP group I, II and III are not significant, however, the means of the first three CRISP groups do differ from the mean of CRISP group IV. This would suggest that expenditure per pupil for library services is a function of school district support potential when that support potential is very high.

Table 31: Differences Between All Possible Pairs of CRISP Group Means for the Variable Number of Librarians Per 1000 Pupils

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | -0.03 | | |
| CRISP III | 0.07 | 0.10 | |
| CRISP IV | 0.28 | 0.13 | 0.21 |

*Significant at $\alpha$ = .05 Scheffé Test

Although differences were found in the CRISP group means for the variable, number of librarians per 1000 pupils in the analysis of variance, the Scheffe test failed to show significant differences. Essentially, this is due to the more conservative nature of the Scheffé test. In viewing the cell means of the CRISP groups, it appears that differences exist between the mean of CRISP group IV and the means of CRISP groups I and II. This would suggest that school district support potential does have an influence on the number of librarians employed per 1000 pupils, with the districts of higher financial support potential employing the greater number of librarians per 1000 pupils.

Educational Service: Curriculum Consultants

The four specific questions asked and the corresponding null hypotheses stated in symbolic form concerning the educational service curriculum consultants are as follows:

(1) Do school districts with differing support potential differ with regard to the average salary of curriculum consultants?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "consultants average salary"

(2) Do school districts with differing support potential differ with regard to the average years of experience of curriculum consultants?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "consultants average years of experience"

(3) Do school districts with differing support potential differ with regard to the academic degrees held by curriculum consultants?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "consultants average academic degree"

(4) Do school districts with differing support potential differ with regard to the number of curriculum consultants per 1000 pupils?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "consultants per 1000 pupils"

Curriculum consultants were found to be unique to CRISP group IV. This resulted in a total lack of data for the other three groups which contra-indicated the use

of analysis of variance as an appropriate statistical procedure. Discussion of this educational service is reserved for the second section of this chapter.

Educational Service: Summer School

For the education service summer school, two questions were asked. These questions and the corresponding null hypotheses stated symbolically are as follows:

(1) Do school districts of differing support potential differ with regard to the expenditure per pupil for summer school?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for summer school"

(2) Do school districts of differing support potential differ with regard to the percentage of the general fund expended for summer school?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for summer school"

The results of the analysis of variance for each of the items defining summer school are summarized in Table 32. The cell means for each variable according to CRISP group are included in the table.

Since none of the items defining the educational service summer school were found to be significantly different among the CRISP groups, it is concluded that the educational service summer school as defined in this investigation bears no relationship to the financial support potential of school districts.

Table 32: Multivariate Analysis of Variance for the Dependent Variables Defining the Educational Service Summer School

| Variable | Mean Square | Univariate F | p less than |
|---|---|---|---|
| Expenditure/Pupil | 16.02 | 1.2015 | 0.3114 |
| Percent General Fund | 0.04 | 0.2695 | 0.8474 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149

Cell Means

| CRISP GROUP | Summer School Expenditure Per Pupil (dollars) | Percent General Fund |
|---|---|---|
| I | $ 1.27 | 0.14 |
| II | 1.29 | 0.15 |
| III | 1.71 | 0.18 |
| IV | 2.51 | 0.21 |

Educational Service: Adult Education

Two questions were asked regarding the educational service adult education. These questions and the corresponding null hypotheses stated symbolically are as follows:

(1) Do school districts of differing financial support potential differ with regard to the expenditure per pupil for adult education?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for adult education"

(2) Do school districts of differing financial support potential differ with regard to the percent of general fund expended for adult education?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for adult education"

A summary of the results of the analysis of variance for each of the items defining adult education are displayed in Table 33. The cell means for each variable according to CRISP group are included in the table.

As none of the items defining the educational service adult education were found to be significantly different, it is concluded that the educational service adult education as defined in this investigation bears no relationship to the financial support potential of school districts.

Table 33: Multivariate Analysis of Variance for the Dependent Variables Defining the Educational Service Adult Education

| Variable | Mean Square | Univariate F | p less than |
|---|---|---|---|
| Expenditure/ Pupil | 283.32 | 2.5364 | 0.0590 |
| Percent General Fund Expenditure | 1.27 | 1.2114 | 0.3077 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149

Cell Means

| CRISP GROUP | Adult Education Expenditure Per Pupil (dollars) | Percent General Fund Expenditure |
|---|---|---|
| I | $ 2.99 | 0.35 |
| II | 4.45 | 0.51 |
| III | 3.26 | 0.34 |
| IV | 8.27 | 0.70 |

Educational Service: Transportation

Two specific questions were asked regarding the educational service defined as transportation. These questions and the corresponding null hypotheses stated in symbolic form are as follows:

(1) Do schools with differing support potential differ with regard to the expenditure per pupil for transportation?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for transportation"

(2) Do schools with differing support potential differ with regard to the percent of general fund expenditure for transportation?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for transportation"

The results of the analysis of variance for each of the above items defining the educational service transportation are summarized in Table 34. The cell means for each of the variables according to CRISP group are also included in the table. These results show that the obtained F ratio is significant for both variables defining transportation as an educational service.

Scheffé Post Hoc comparisons were accomplished and these results are displayed in Tables 35 and 36.

Table 34: Multivariate Analysis of Variance for the Dependent Variables Defining the Educational Service Transportation

| Variable | Mean Square | Univariate F | p less than |
|---|---|---|---|
| Expenditure Per Pupil | 10,402.66 | 33.9192* | 0.0001 |
| Percent General Fund Expenditure | 223.60 | 62.2803* | 0.0001 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149

Cell Means

| CRISP GROUP | Transportation Expenditure Per Pupil (dollars) | Percent General Fund Expenditure |
|---|---|---|
| I | $ 59.74 | 7.26 |
| II | 58.22 | 6.71 |
| III | 52.29 | 5.96 |
| IV | 28.17 | 2.48 |

Table 35: Differences Between All Possible Pairs of CRISP Group Means for the Variable Expenditure Per Pupil for Transportation

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | -1.52 | | |
| CRISP III | -7.45 | -5.93 | |
| CRISP IV | -31.57 | -30.05* | -24.12* |

*Significant $\alpha$ = .05 Scheffé Test

Table 36: Differences Between All Possible Pairs of CRISP Group Means for the Variable Percent of General Fund Expenditure for Transportation

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | -0.55 | | |
| CRISP III | -1.30 | -0.75 | |
| CRISP IV | -4.78* | -4.23* | -3.48* |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé procedure applied to the items defining transportation as an educational service reveal that the significant F ratios obtained for the variables were due to CRISP group IV being significantly lower than the other groups on both items. It appears that the school districts comprising CRISP group IV possess characteristics which differentiate them from districts in the other groups relative to transportation as a defined educational service.

These results indicate that the schools with the highest support potential spend considerably less per pupil as well as a smaller portion of their general fund for transportation. This difference is undoubtedly a function of the demographic characteristics of these schools most of which are located in urban and metropolitan areas. The fact that no significant differences in the educational service defined as transportation were found among CRISP groups I, II and III lend credence to the above conclusion.

Educational Service: Attendance

In considering the educational service attendance two questions were asked. These questions and the corresponding null hypotheses stated symbolically are as follows:

(1) Do school districts of differing financial support potential differ with regard to the expenditure per pupil for attendance?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "expenditure per pupil for attendance"

(2) Do school districts of differing financial support potential differ with regard to the percent of general fund expended for attendance?

$H_o$: $Q_1 = Q_2 = Q_3 = Q_4$ "percent of General Fund spent for transportation"

The results of the analysis of variance for each of the items defining attendance are summarized in Table 37. The cell means for each variable according to CRISP group are included in the table.

A significant difference was found among the CRISP groups for the expenditure per pupil for attendance and the percent of the general fund expended for attendance services.

Tables 38 and 39 display the results of the Scheffé Post Hoc comparisons applied to the variables expenditure per pupil for attendance and percent of general fund expended for attendance.

Table 37: Multivariate Analysis of Variance for the Dependent Variables Defining the Educational Service Attendance

| Variable | Mean Square | Univariate F | p less than |
|---|---|---|---|
| Expenditure Per Pupil | 45.89 | 9.1914* | 0.0001 |
| Percent General Fund Expenditure | 0.22 | 6.6630* | 0.0003 |

*Significant at = .05

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 149

Cell Means

| CRISP GROUP | Attendance Expenditure Per Pupil (dollars) | Percent General Fund Expenditure |
|---|---|---|
| I | $ 0.07 | 0.01 |
| II | 0.21 | 0.03 |
| III | 0.63 | 0.05 |
| IV | 2.20 | 0.16 |

Table 38: Differences Between All Possible Pairs of CRISP Group Means for the Variable Expenditure Per Pupil for Attendance

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 0.14 | | |
| CRISP III | 0.56 | 0.42 | |
| CRISP IV | 2.13* | 1.99* | 1.57* |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé method shows that the differences between the means of CRISP groups I, II and III are not significant. However, the means of CRISP groups I, II and III do differ from the mean of CRISP group IV. This would suggest that the expenditure per pupil for attendance is a function of school district financial support potential when that support potential is very high.

Table 39: Differences Between All Possible Pairs of CRISP Group Means for the Variable Percent of General Fund Expenditure for Attendance

| | CRISP I | CRISP II | CRISP III |
|---|---|---|---|
| CRISP I | | | |
| CRISP II | 0.02 | | |
| CRISP III | 0.04 | 0.02 | |
| CRISP IV | 0.15* | 0.13* | 0.11 |

*Significant at $\alpha$ = .05 Scheffé Test

The Scheffé test indicates that the mean of CRISP group IV differs from the means of CRISP groups I and II. This would suggest that the percent of general fund expenditure for attendance is a function of school district support potential when that suppoet potential is considered at the high and low ends of the range.

These results would indicate that the educational service attendance as defined in this investigation is a function of school district support potential. It appears that the differences exist between those school districts that rank very high on the indicators of support potential and all of the other support potential groups.

Section Two

The second section displays the percentage of school districts by CRISP group providing those educational services which were not offered in all of the study school districts.

Table 40 shows the percentage of school districts in each CRISP group. The educational service defined as curriculum consultants service was the only one which was unique to CRISP group IV.

Guidance and counseling was provided by 100 percent of the school districts in groups III and IV and by 77 and 73 percent respectively in groups II and I. Library personnel services were provided in 100 percent of the group IV school districts and 97, 83, and 64 percent respectively for groups III, II, and I.

Summer school service was provided in 78 percent of the school districts in group IV, 57 percent of the districts in group III, 29 percent of the districts in group II and 8 percent of the districts in group I. Adult education also showed systematic progression from 24 percent in group I districts to 45 percent in the group II districts and 57 in the group III districts while 82 percent of the group IV districts reported adult education services.

Health services were reported in most all of the school districts with the following percentages: Group I, 82 percent; group II, 90 percent; group III, 96 percent; and group IV, 98 percent. Attendance services were reported in 53 percent of the group IV districts, 29 percent of the group III districts, 13 percent of the group II districts and 15 percent of the group I districts.

These percentage expressions would suggest that the existence of these educational services in the school districts is a function of financial support potential.

Table 40: Percent of the School Districts Under Study Reporting Expenditures for Educational Service Items According to the CRISP Groups (Items for which all school districts reported are not included in the table)

| EDUCATIONAL SERVICES | CRISP GROUPS PERCENT REPORTING | | | |
|---|---|---|---|---|
| | IV | III | II | I |
| Guidance and Counseling | 100 | 100 | 77 | 73 |
| Library Personnel | 100 | 97 | 83 | 64 |
| Curriculum Consultants | 32 | 0 | 0 | 0 |
| Summer School | 78 | 57 | 29 | 8 |
| Adult Education | 82 | 57 | 45 | 24 |
| Health | 98 | 96 | 90 | 82 |
| Attendance | 53 | 29 | 13 | 15 |

Section Three

The third section of this chapter shows histograms including the ranges, means and two standard errors of the mean for educational services of a like-nature by CRISP group. Figures 1 and 2 show comparable salary information for all of the CRISP groups on teachers, superintendents, secondary principals, elementary principals, guidance counselors,

librarians and curriculum consultants. The bar graphs showing the salary information give support to the conclusion that salaries paid to professional personnel tend to be a function of school district financial support potential with districts of greater support potential paying higher salaries to professional employees.

Figures 3 and 4 display histograms for years of experience for school district professional personnel. CRISP group IV was the only group with curriculum consultants showing that this educational service exists only in districts with very high financial support potential.

There tended to be a systematic progression between the means of the CRISP groups on the variables secondary principals years of experience and teachers years of experience. However, for years of experience of superintendents, there were no significant differences between CRISP groups.

The ranges of years of experience for librarians, guidance counselors and elementary principals were greatest in CRISP group II. The means of years of experience for librarians, guidance counselors and elementary principals were higher in CRISP group II than the means for the corresponding educational services in CRISP group III.

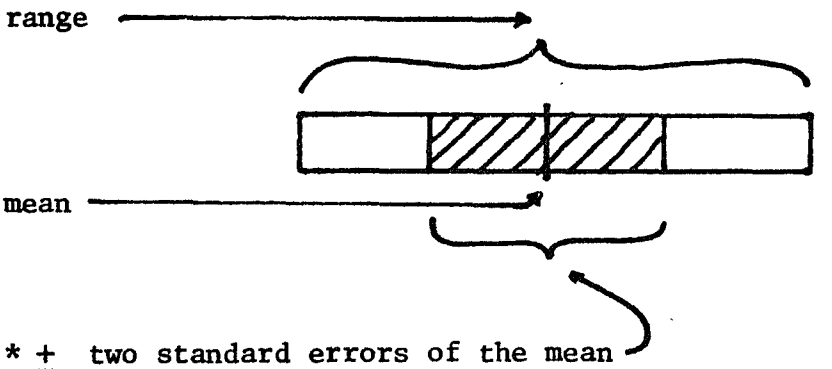
Figure 5 provides a graph comparison of academic degree information for certain professional personnel. Data for elementary and secondary principals were not reported as there tended to be no differences between the CRISP groups. The elementary and secondary principals tend to possess Master's Degrees regardless of school district financial support potential.

Figure 6 gives a comparative ratio in graph form for the numbers of professional employees per 1000 pupils by CRISP group.

In figures 7 and 8, the dollar expenditure per-pupil is displayed for various educational services. The ranges for some of the services tended to vary but generally showed the mean expenditure to be a function of school district financial support potential. The exception to the preceeding statement is shown in Figure 9, where the dollar expenditure per-pupil for transportation is inverse to the financial support potential indicators.

Figures 10 and 11 show the percent of the general fund expended for certain educational services. There tended to be rather large differences in the ranges but generally supported the systematic progression of mean expenditure and financial support potential.

For figures 1 through 11, the histograms used to depict the range, the mean and the standard error of the mean for similar defining items across educational services have the descriptive data presented according to the following legend:




*Note that the ± two standard errors of the mean established a .9544 percent confidence interval. Plotting these intervals graphically provides a visual display of the significant differences among the CRISP groups by observing whether or not the bands overlap. An overlap of these bands indicates no significant difference at = .0456.

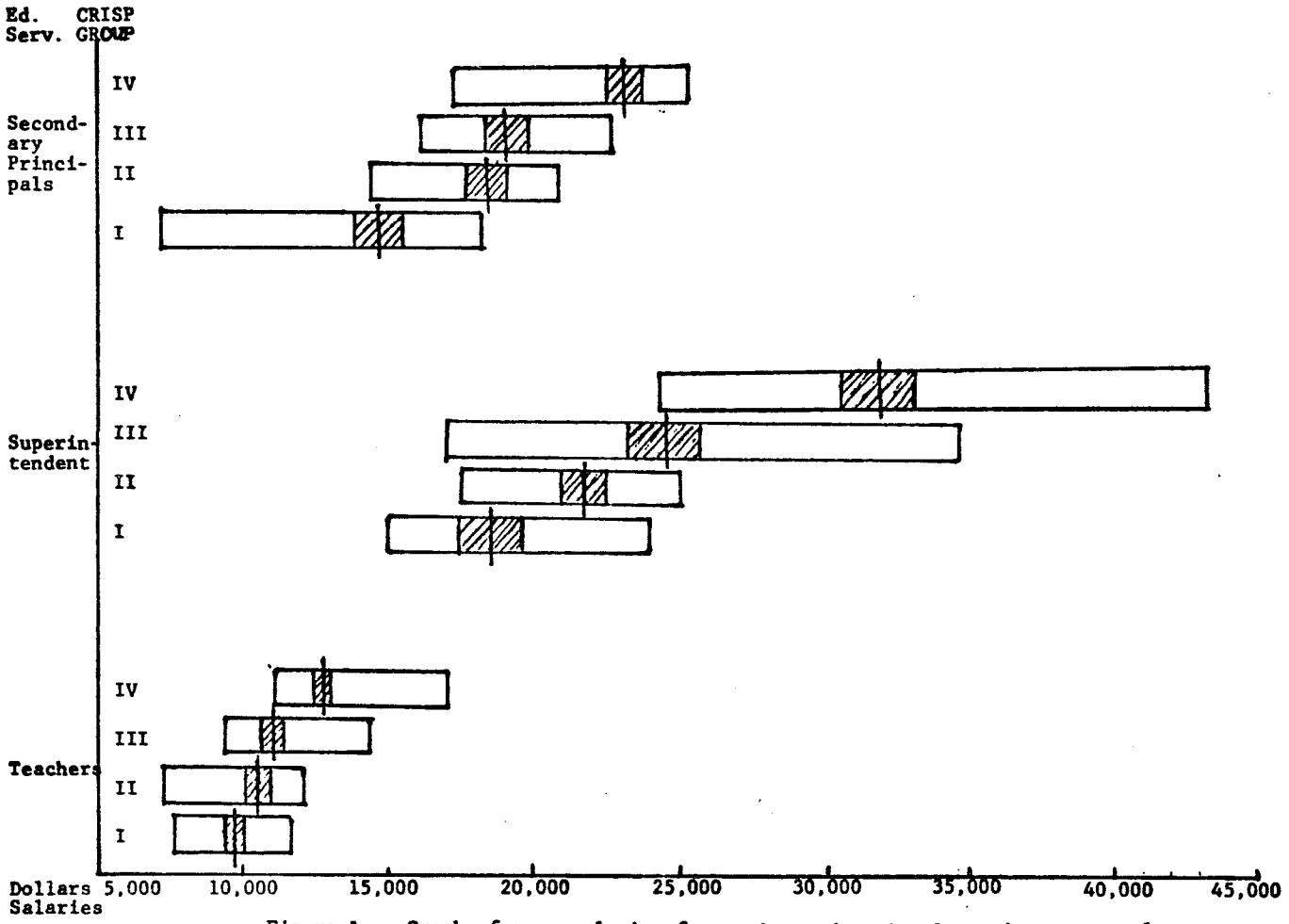



Figure 1 : Graph of mean salaries for various educational service personnel according to the CRISP groups.

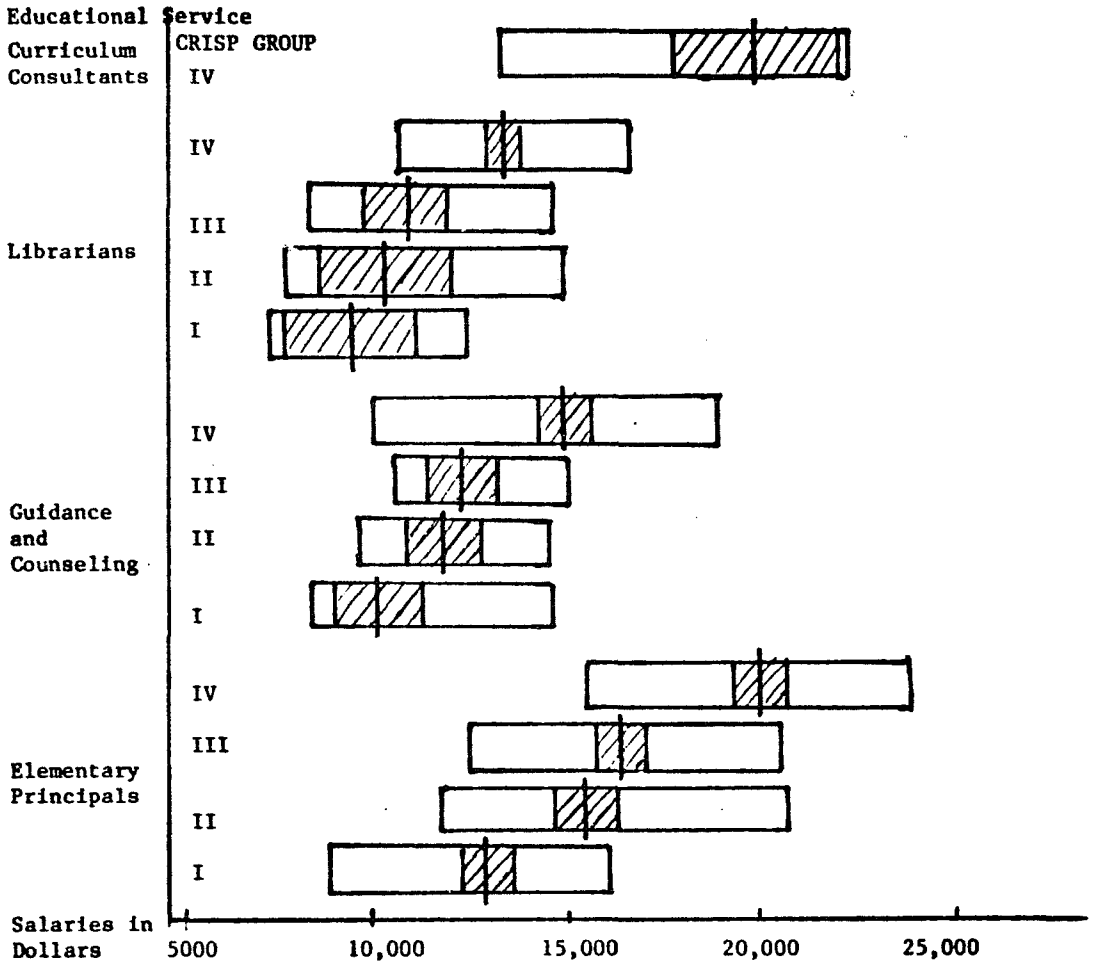



**Figure 2:** Graph of the mean salaries for various educational service personnel according to CRISP groups.

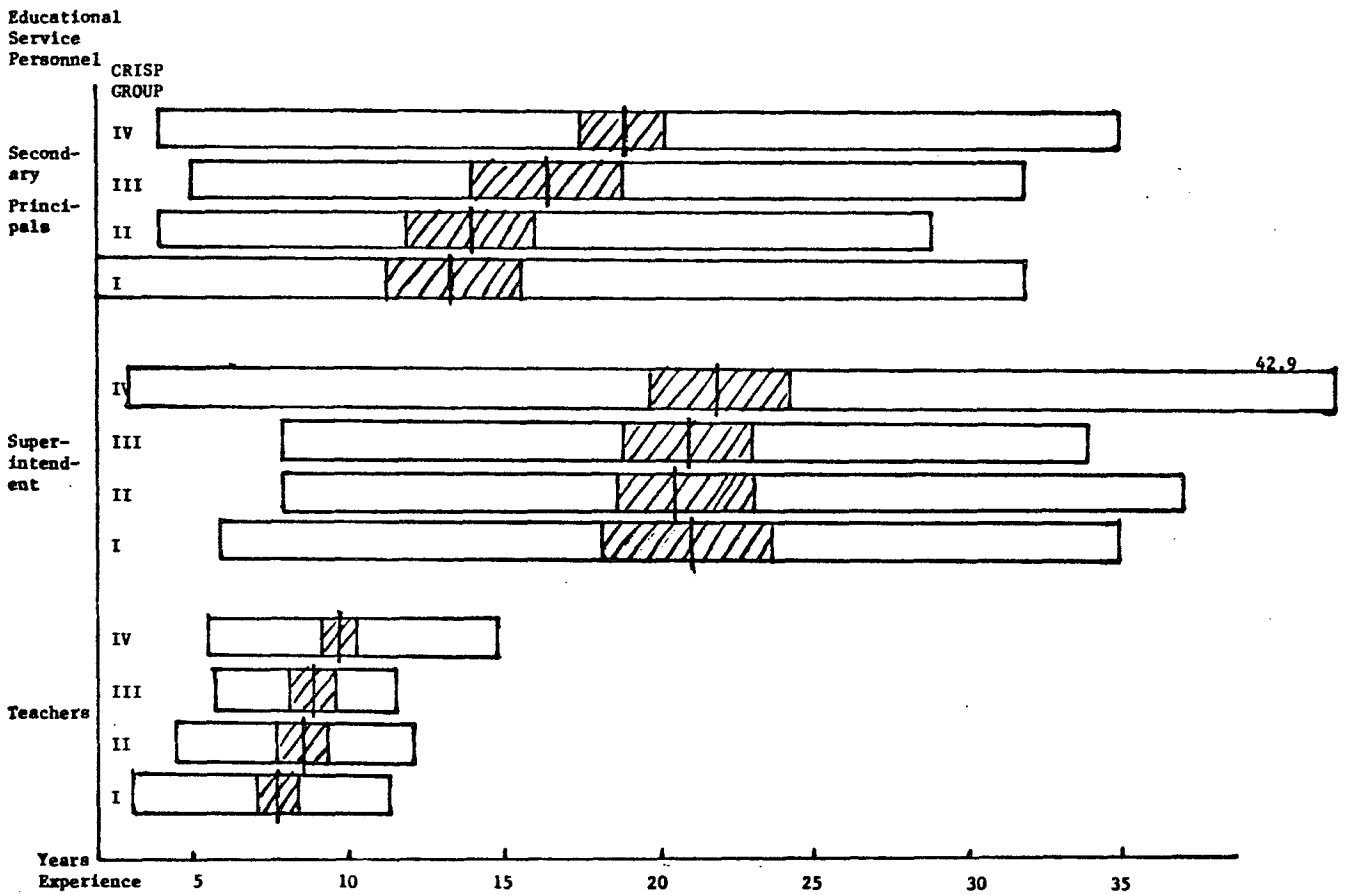



Figure 3: Graph of mean number of years of experience for various educational service personnel according to the CRISP groups

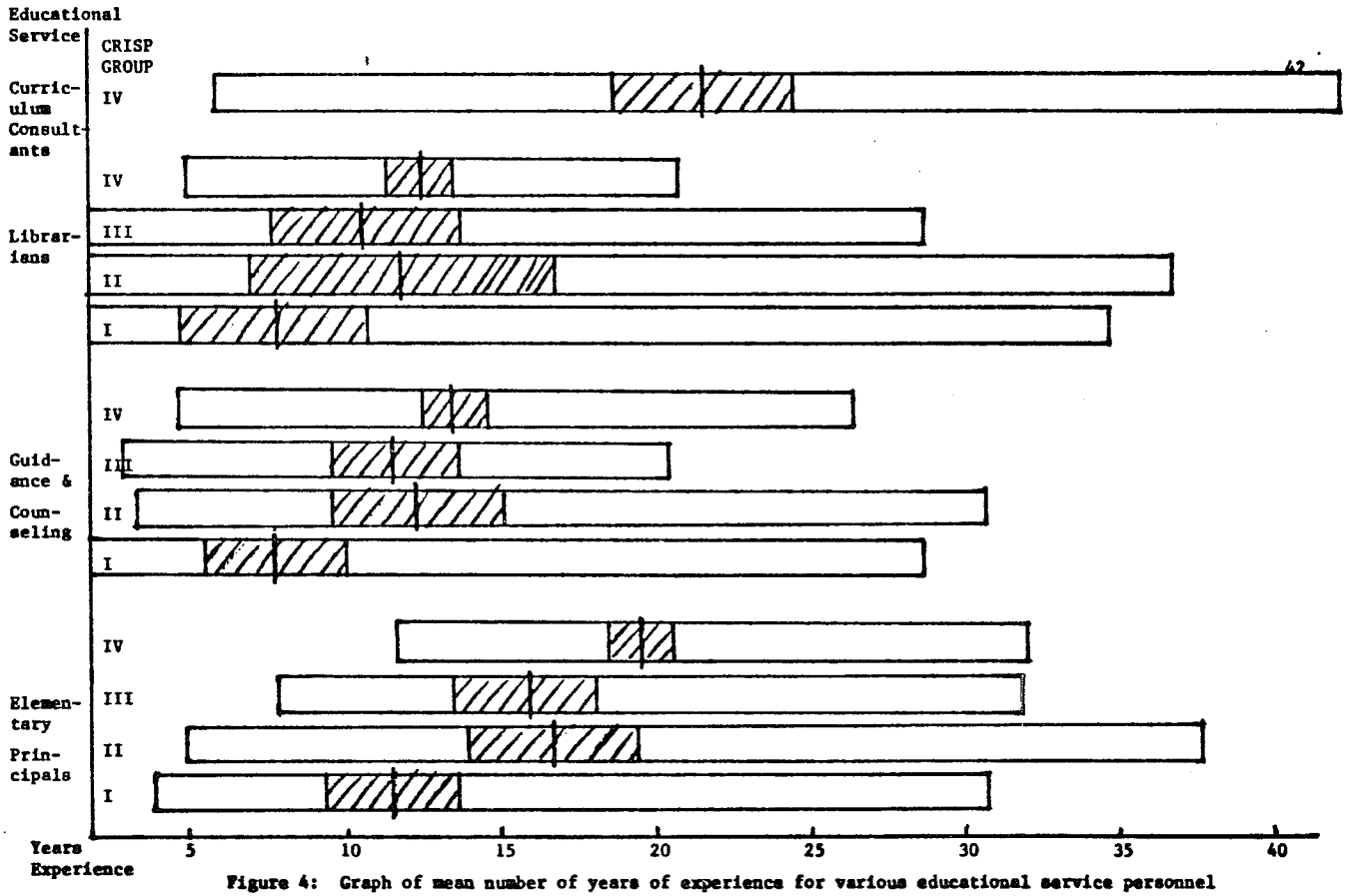



Figure 4: Graph of mean number of years of experience for various educational service personnel according to CRISP groups.

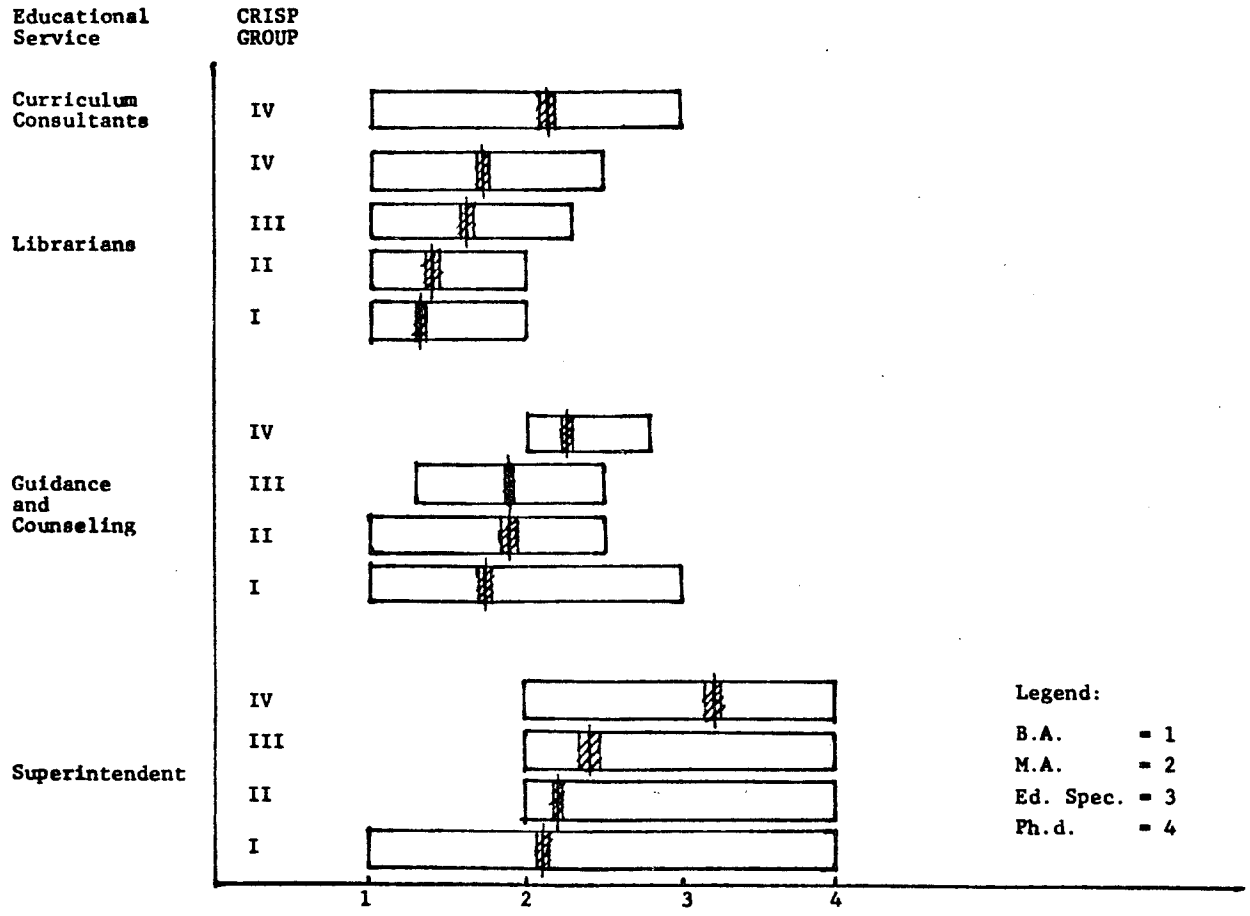



Figure 5 : Graph of mean academic degree information according to the CRISP groups.

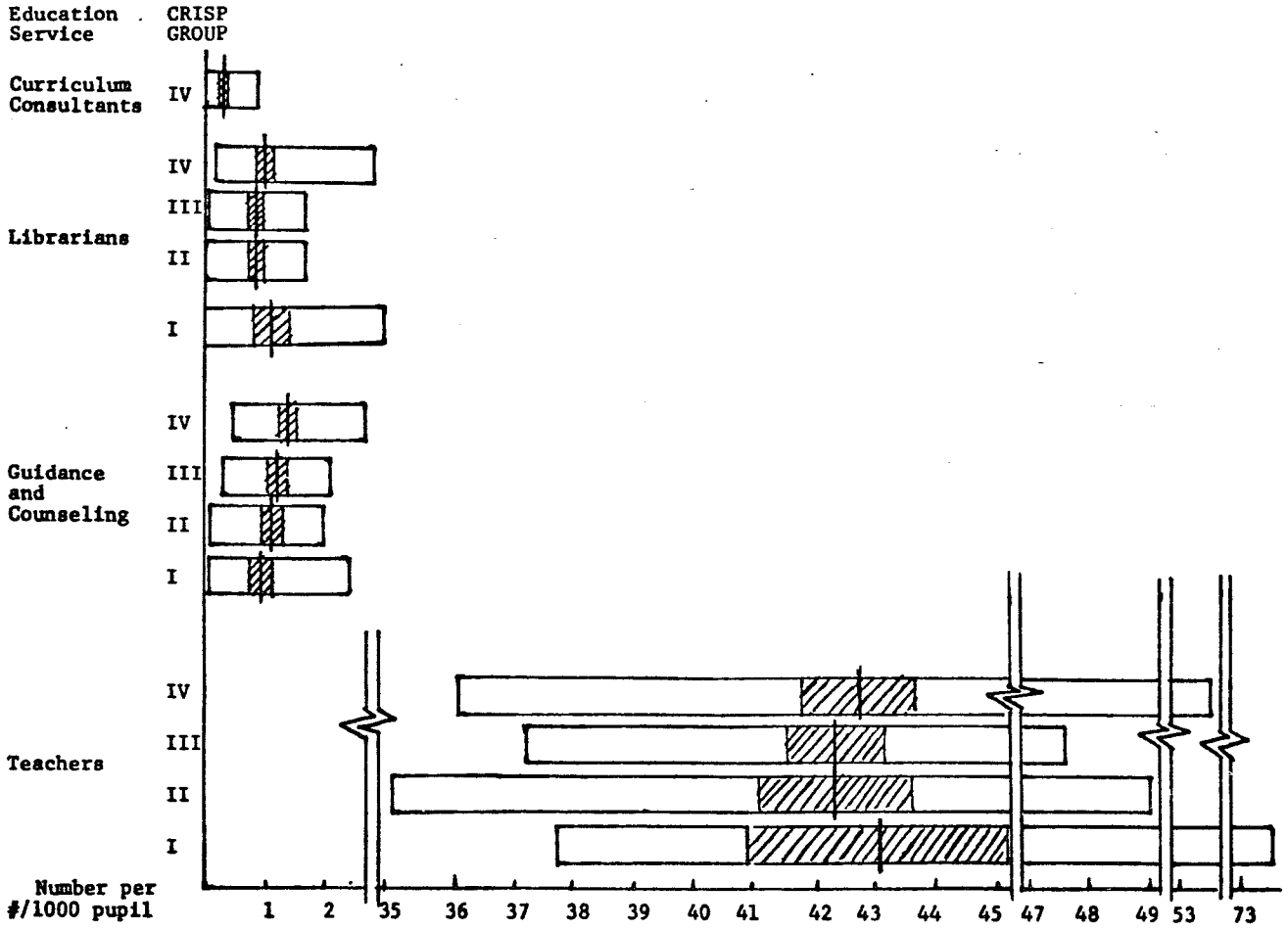



Figure 6 : Graph of mean ratio of various educational service personnel and 1000 pupils according to CRISP groups.

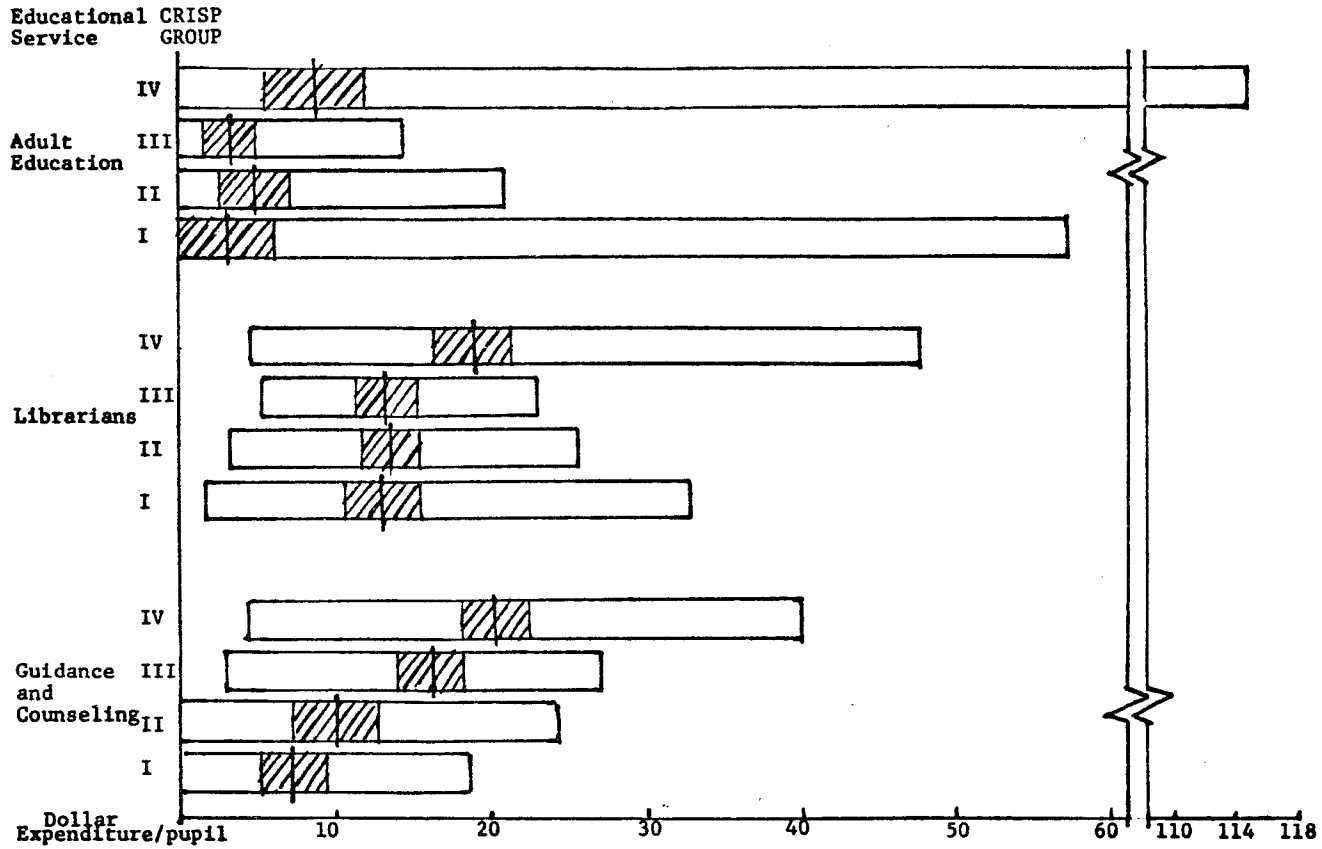



Figure .7 : Graph of the mean dollar per-pupil expenditure for various educational services according to CRISP groups.

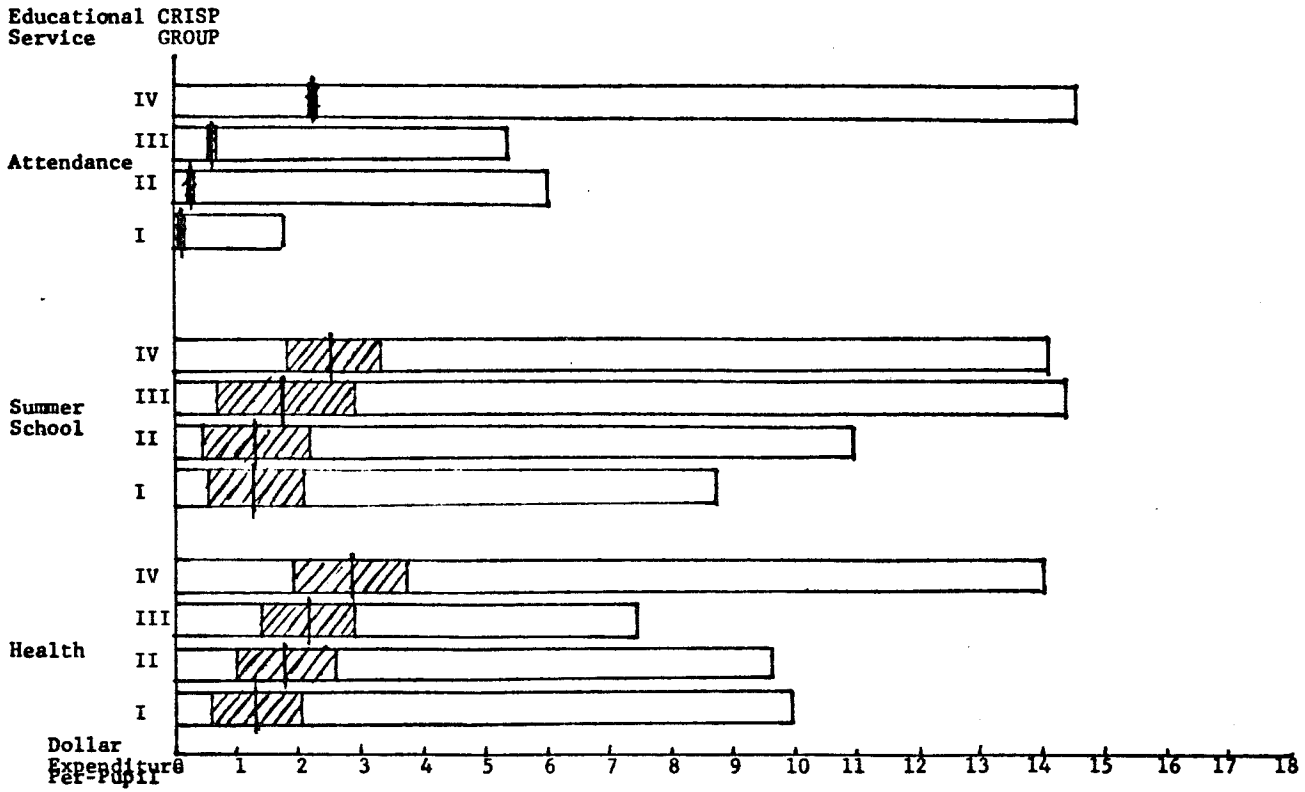



Figure 8 : Graph of mean dollars spent per-pupil for various educational services according to CRISP groups.

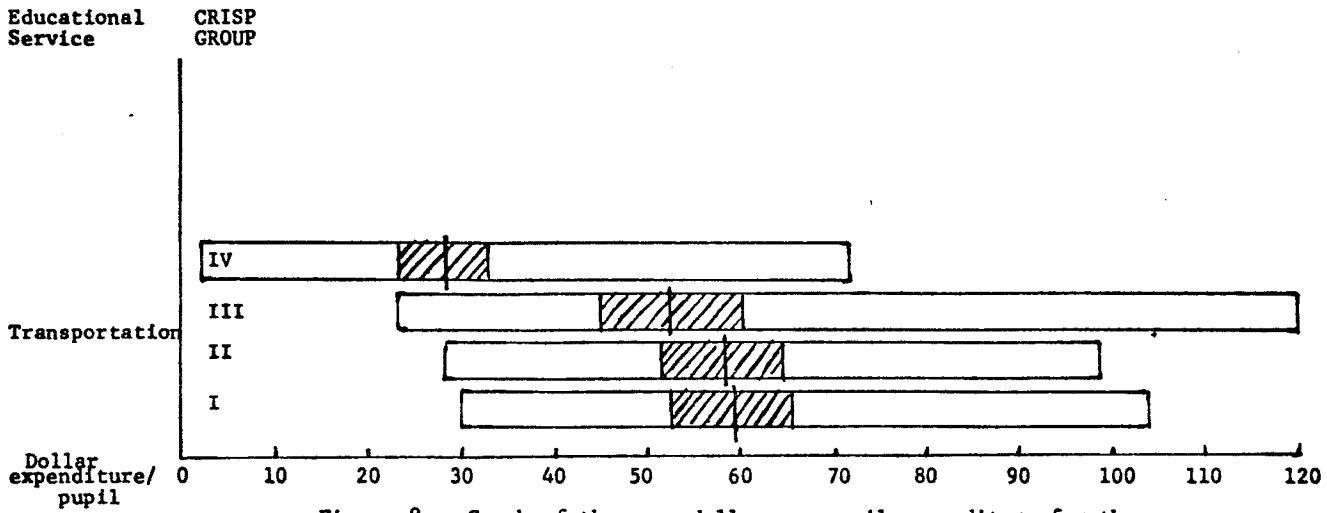



Figure 9 : Graph of the mean dollar per-pupil expenditure for the educational service transportation according to CRISP groups.

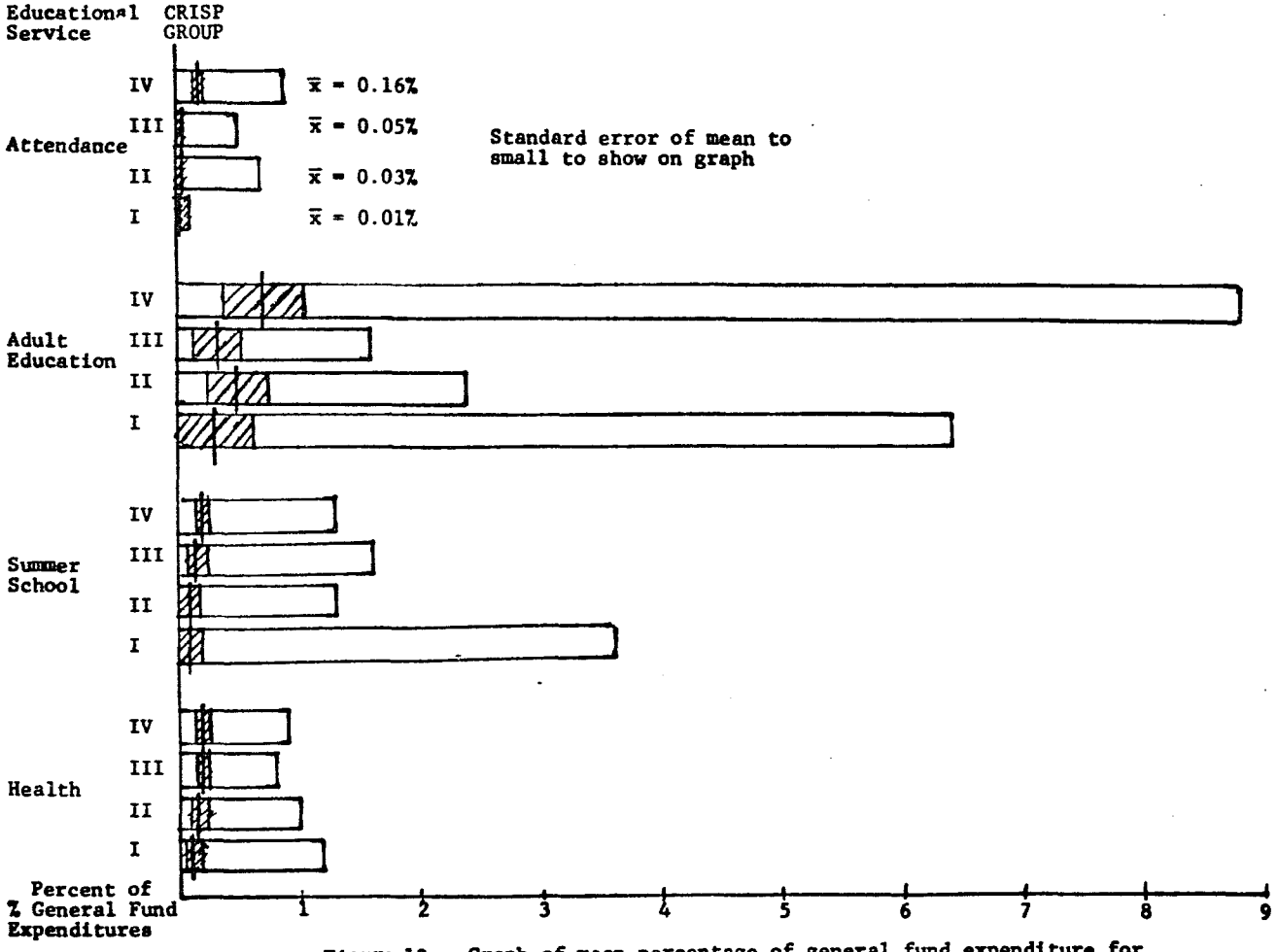



Figure 10: Graph of mean percentage of general fund expenditure for various educational services according to CRISP groups.

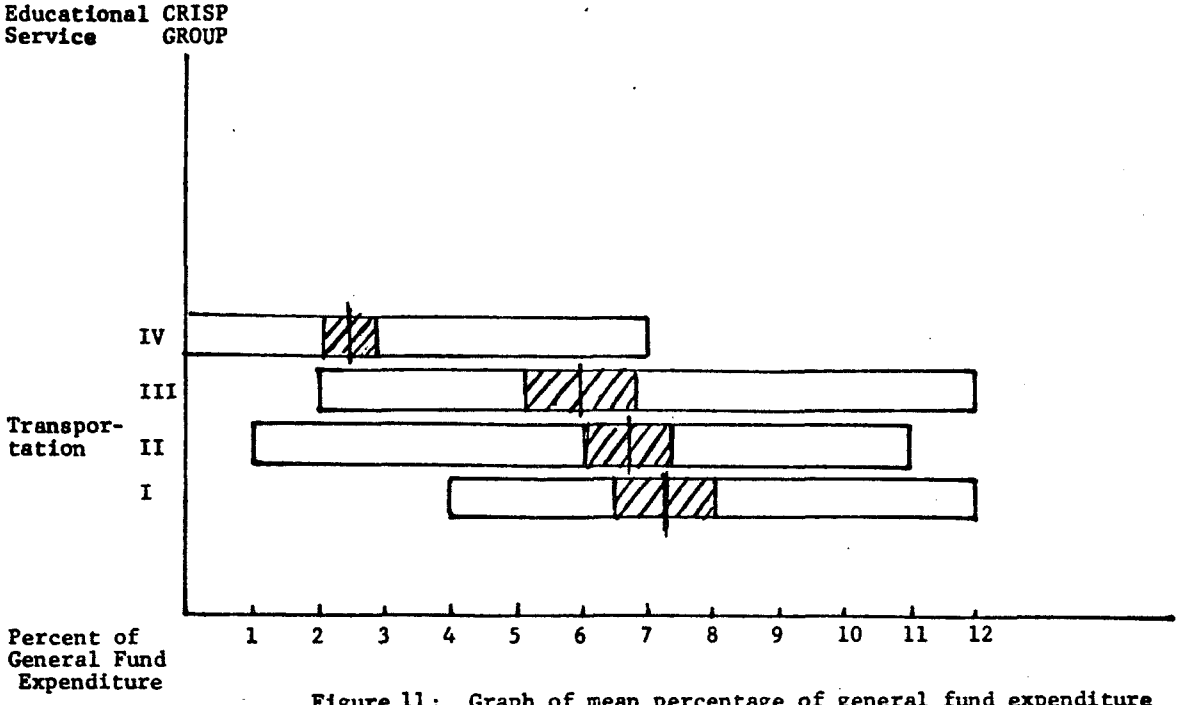



Figure 11: Graph of mean percentage of general fund expenditure for educational service "transportation" according to CRISP groups.

The academic training tended to be systematic with the high and low CRISP groups. However, the group I school districts reported a higher percentage of teachers with MA degrees than the other three groups. The information for secondary and elementary principals was not used because these personnel tend to have the same degrees for all groups throughout the State.

The graph shows that although some differences are slight, academic training does appear to be a function of financial support potential.

## Summary

The conclusions drawn regarding the hypotheses in this chapter are based on the sample-groups of school districts which represented specific categories of wealth according to cost-related indicators of support potential. Consequently, the sample includes only somewhat "pure" groups of school districts that rank from high to low in four groups on the four factors of size, wealth, effort, and expenditure.

The differences between the groups in the provision of most of the defined educational services were significant at the .05 level of probability. There was only one educational

service (curriculum consultants) that was unique to only one of the CRISP groups (IV).

Although it was concluded that most educational services were functions of the financial support potential of the school district groups, there were some services for which no significant differences were found. One educational service (transportation) was significantly less in the highest financial support group. This was probably more a function of community type and demography than adequacy or extent of services.

Although a number of cost-related studies are made annually on school districts, further study is encouraged in areas of educational services. The need for more efficient and effective methods of spending educational dollars may well be the key to preserving a desirable degree of local control in education.

# CHAPTER V

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### Purpose Of The Study

This study was undertaken to investigate the educational services provided by Michigan's public K-12 school districts grouped according to four cost-related indicators of support potential (CRISP). The primary purpose of the study was to determine if differences exist between the CRISP groups in the provision of educational services and the nature of the differences should they exist.

Michigan's 528 K-12 public school districts (excluding Detroit) were grouped in terms of defined quartile rankings according to four cost-related indicators of support potential: Size, effort, ability, and expenditure.

Three general hypotheses were formulated to test for differences in the extent or existence of educational services between the CRISP groups. The three general hypotheses are:

1. There are differences between school districts classified according to selected cost-related indicators of support potential (CRISP) in the provision of certain educational services as quantified in this investigation

by an educational services inventory (ESI). The selected cost-related indicators of support potential are defined in terms of quartile rankings according to size, effort, expenditure and ability.

2. The percentage of school districts providing the defined educational services is directly related to school district financial support potential.

3. There is a direct relationship between certain selected items defining the educational services and the support potential of school districts.

Data were obtained from the Michigan Department of Education and a survey form and combined for each of the 153 school districts included in the four CRISP groups. An educational services inventory (ESI) was developed by school district and processed on data cards for computer program analyses.

A one-way analysis of variance with fixed effects statistical treatment was used to test for differences between the CRISP groups on each of forty educational service variables and Post Hoc comparisons were made to determine which CRISP group differences contributed to the significant F.

The range, mean and standard error of the mean for selected defining items were computed for each of the CRISP groups. These data were displayed graphically in an attempt to determine any direct relationships existing between these items and the financial support potential of the school districts. A band showing two standard errors of the mean was used to indicate a .95 confidence interval.

Major Findings

1. School districts with comparatively low financial support potential place a higher priority on transportation as an educational service than districts with high support potential.

A strong inverse relationship was found between the CRISP group school districts in the provision of the educational service defined as transportation. School districts with lower financial support potential spend, on an average, a higher percentage of their general fund and more per-pupil annually for transportation than school districts with greater financial support potential.

School districts with higher allowable per-pupil transportation costs qualify for additional state support in Michigan, however, a higher percentage of general fund

expenditure for transportation would theoretically result in a lower percentage of the general fund available for other service expenditures.

These results concur with the part of Boyer's[51] study that showed transportation costs to be dependent upon the population density and area covered by the school district. As the school districts in the lower CRISP groups are generally rural, cover larger areas and tend to be more sparsely populated, the need exists for greater transportation services.

Recent court decisions in Michigan[52] mandating inter-district busing in metropolitan areas to achieve racial balances may have profound effects on educational transportation service priorities.

Some other factors regarding the transportation service exist that warrant mention but were not covered extensively by this study. Specifically, objective information on the availability of transportation for field trips, school bus

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[51]Boyer, loc. cit.

[52]U. S. Supreme Court decisions have ordered that desegregation plans be developed for Detroit and Kalamazoo

driver training programs, and bus fleet maintenance practices are important in the total service but are not delineated in reported costs.

As the expenditures for school transportation increase, (school district transportation costs in Michigan for 1974-75 will approximate $100,000,000) cost-benefit studies may provide the basis for more efficient management practices.

2. School districts with greater financial support potential provide more of the educational services defined as teaching, administration, guidance and counseling, library and attendance services than school districts with lesser financial support potential.

These services are characterized generally by professional personnel and as such, are directly related to the relative wealth of school districts. The variables that make up these services (salaries paid, numbers per 1000 pupils, experience and training) are inputs that school districts with greater financial support potential tend to demand to a greater extent than districts with lesser financial support potential.

These findings substantiate the results of other recent studies which show that school districts with more financial

resources provide more inputs and contribute more financially to the educational program. However, several qualifications for these results are suggested: 1. The relationship between salary levels of educators and other professionals in the area making up the school district may not be remarkable. 2. The proximity of institutions of higher education could make advanced training more accessible for the higher CRISP group school districts. 3. Any conclusions that larger expenditures for these educational services automatically result in higher pupil achievement (educational outputs) are not intended.

For practicing school administrators, these and concurring results have profound implications. The financial support potential level of a school district can determine the quality level of the professional staff; however, in measuring the cognitive achievement or pupil outputs, the socio-economic make-up of the area and the value place on education by constituents of the district are primary factors.

The characteristics of the educational service defined as teaching have been quite extensively studied by various interest groups. Figures recently released by the Michigan Department of Education[53] show that total educational costs

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[53] Michigan Educational Statistics - 1975, Lansing, Michigan, Michigan Department of Education, 1975.

for the 1974-75 fiscal year were approximately 2.6 billion dollars, an increase from 1.9 billion in 1971-72. At the same time, total enrollments dropped about 75,000 pupils to a total of 2,137,551 for the 1974-75 school year. Although costs were higher and enrollments lower, the state-wide pupil-teacher ratio dropped only slightly from 24.8 in 1971-72 to 23.8 in 1974-75. The additional staff costs are primarily accounted for by increases in the number of personnel in specialty areas such as psychologists, audio-visual specialists, teachers' aides and inflation.

The educational service administration tends to be a function of school district financial support potential at the extremes of the support levels. The exception previously noted was the years of experience for superintendents which is about the same for all of the CRISP groups. While some superintendents express a desire to spend the latter years of their tenure prior to retirement in some small school district free from the problems frequently associated with larger districts, it seems a bit presumptuous that this would explain the longevity of the CRISP group I school superintendents.

Although the percentage increase in numbers of administrators has not been comparable to staff increases in the teaching areas,[54] administrative costs are higher. This is probably due to inflation and added costs for more specialty administrative services such as negotiations and data processing.

For the guidance and counseling services, differences in the variables were found between the highest and lowest CRISP groups. This would indicate that financial support potential influences the guidance and counseling service only when it is very high or very low.

The instrumentation in this study did not explore specific roles of the individual services and some need was felt in the area of guidance and counseling for more explicit job descriptions. Substantial increases in the number of auxiliary services including social workers, career education specialists, consultants for the emotionally impaired and psychologists provide many counseling-related services.

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[54] Michigan Educational Statistics - 1975, op. cit.

Library services are also a function of school district financial support potential--mainly when the support potential is very high or very low. The two CRISP groups, II and III showed little difference in terms of services provided, but significant differences were found between CRISP groups I and IV.

The future role of school library services may be influenced by the development of large media centers. An implication here is that many smaller school districts with low financial support potential may be able to avail themselves of a number of instructional media and library services through a center located outside of the district. With the development of media centers and systems for delivering their contents, school districts may be able to enjoy a number of library services regardless of financial support potential.

3. There are no differences in the provision of educational services defined as health, testing, summer school and adult education between the CRISP group school districts.

These services were essentially the same for all of the CRISP group school districts for per-pupil expenditures,

percentage expenditures of the general fund and for health and testing, numbers of services provided by grades.

Some health services were provided in all of the school district CRISP groups, usually in the form of hearing and vision screening during the early grades. A few school districts within each of the CRISP groups provided some dental screening and nearly all of the physical exams provided to pupils were associated with athletic programs. The percentage of general fund and per-pupil expenditures indicated both contractual arrangements and direct salary payments for health services in all of the CRISP group school districts. Limitations in the instrumentation did not allow a finite determination of whether or not any or all of the CRISP groups contracted for health services or employed staffs equally.

Some standardized tests were administered in all of the CRISP group school districts. Generally all districts tend to use readiness tests, mostly in the kindergarten, but some at the first-grade level. Achievement tests were administered to some extent in all grades but were used most extensively in grades two through six. Scholastic aptitude or intelligence tests were administered by all of the CRISP

group school districts in grades three through twelve with little preference for any particular grades.

Few differences were noted between the CRISP groups in the administration of Differential Aptitude Tests. Interest inventories and vocational preference tests were also administered on a similar basis in all of the CRISP group school districts. Grades nine and ten were slightly favored for the use of these tests.

A difference was found between CRISP groups I and III in the total number of standardized tests administered in all grades with the CRISP group I school districts administering the greater average number of tests by grade per school district. As no differences were indicated between the CRISP group school districts in the use made of tests or methods of scoring tests, it is difficult to account for the school districts with the lowest level of support potential administering the largest number of tests. It may be that some compensation for curriculum offerings is intended. Or, as no curriculum consultants are employed by school districts in CRISP groups I, II and III, the school districts with the lowest level of support potential may attempt curriculum evaluation and/or improvements by administering a greater total number of tests.

No significant differences were found between the CRISP group school districts in the provision of summer school and adult education services. Although the per-pupil expenditures for summer school were $1.27 and $2.51 respectively for CRISP groups I and IV school districts, (nearly twice as much) statistically the difference was not significant.

All of the CRISP groups included some school districts that reported no expenditures for summer school and adult education services. This suggests that administrative prerogative or factors other than financial support potential influence the provision of these services.

4. The educational services defined as teaching, administration, testing, and transportation were provided by all of the school districts in all of the CRISP groups.

These services vary in the extent or degree to which they are provided by school districts; however, as 100 percent of the school districts provide them, it is concluded that teaching, administration, testing and transportation are essential to all school programs.

5. The educational service defined as curriculum consultants is unique to the CRISP group school districts with the highest level of financial support potential.

Relatively few of these districts (about one-third) provide the service. This would indicate that curriculum consultants per se are a luxury that few school districts feel they can afford.

As the CRISP group IV school districts have the lowest expenditure per-pupil for transportation and tend to administer a low number of tests by grade, it may be that large numbers of pupils warrant the use of curriculum consultants and that these districts tend to use this service in lieu of testing for curriculum evaluation and development.

6. The average salaries paid to professionals, the average level of academic training of professionals and for the most part, the years of experience of professionals (except for superintendents) are directly related to the financial support level of the CRISP group school districts.

These variables show a systematic progression from low to high in relationship to the financial support potential of the CRISP group school districts.

7. No significant differences were found in the ratios of various professional personnel per 1000 pupils between the CRISP groups with the exception of guidance and counseling.

A slight relationship was found with the CRISP group IV school districts employing 1.32 guidance and counseling personnel per 1000 pupils as compared to .68 for the CRISP group I school districts.

A reasonable conclusion that higher expenditures for professional personnel would result in more personnel per 1000 pupils seems plausible. However, this is offset by the districts with low financial support potential being less efficient in class sizes.

Discussion, Implications And Conclusions

It has been well established that school districts with high financial support potential tend to spend more for the educational services they provide. However, as was first noted in Chapter II, there is no evidence to show that these districts are more efficient producers of cognitive achievement by their pupils, in fact, the opposite may be true. Yet, it is accepted by many educators that some school districts in Michigan are too small and lack the financial resources potential necessary to provide a comprehensive school program.

Methods of distributing state-aid to school districts have attempted to equalize educational resources and a

number of categorical appropriations have been established to provide additional funds for specific priority areas. Various legislative attempts have been made to reorganize small school districts into units of optimal or minimal size. In spite of these efforts, problems relating to finance equity and size remain.

For many of the defined educational services, very little information of a cost-benefit nature exists that enable school administrators to make accurate comparative judgements. Some problems also exist in the accounting procedures used by school districts in reporting educational costs. To some extent, this may be improved by a proposed change in the accounting procedure scheduled for implementation in Michigan for the 1976-77 school year.

This study has a number of implications and discussion issues for school district program management. As normative data are established for a number of the defining educational service items, comparisons by individual districts would be feasible. Average annual expenditures per-pupil and the percentage of the general fund expended for specific educational services could provide useful comparative information for the establishment of program priorities.

Using data from an educational services inventory (ESI) might also have some practical application in collective bargaining. Normative data are important in the determination of positions upon which priorities are placed by school district administrators.

A criticism of certain state-aid categorical funding has been that specific costs for aspects of school programming are lacking or grossly imprecise. The use of an ESI with an appropriate sample of qualified school districts could provide an efficient way to derive estimates for fiscal planning.

The perennial request for additional funds for financing education has been predicated in past years on increased pupil enrollments, however, recent birthrate trends are resulting in smaller enrollments. With general costs continuing to rise in spite of fewer pupils, school district managers might use an ESI in relationship to a school district's financial support potential to justify the need for program development funds.

Although it is presumptuous to assume that the solutions to school program evaluation are provided by this study, hopefully, some insights into the evaluation of educational services are gained. Those involved in the daily management

of school districts may find some practical applications of an ESI for comparative purposes. Striving for the idealistic goal of providing equal educational opportunities by school districts with unequal financial support potential becomes closer to realization with better information and greater understanding of the educational program and related costs.

Developing specific recommendations from the results of this study emphasizes the difficulty in measuring qualitative aspects of educational services. In other terms, there is a lack of definition for what constitutes good educational services. This problem is prevalent to some extent with all areas of school evaluation and accreditation.

The geographic and demographic characteristics of a school district are important factors in the consideration of the educational services provided. As these factors and the educational services have some relationship to the financial support potential of the school district, additional study is recommended in demographic classifications and descriptions.

This investigation addressed a number of educational services, however, each defined educational service should be considered as specific items with individual interpretations.

Although many services have similar features, the specific nature and uniqueness of school districts are essential considerations in program planning and management.

Some constraints are made on the sample of school districts used. Much of the information can be generalized to all school districts, however, a user of the (ESI) should be cautioned about its use with school districts that have widely varying financial support potential factors.

Recommendations

As there is an ongoing need to study the school program for more effective and efficient management methods, some recommendations are made relative to this study:

Further study is needed to analyze the educational services in school districts with contrasting financial potential, e.g., high state equalized valuation and low operational millage, or small pupil membership and high annual expenditure per-pupil, etc. Although this study was essentially concerned with educational services in school districts with similar financial support potential, useful information might be gained from studies using all types of districts in the provision of educational services.

The use of the Educational Services Inventory should be continued in the analyses of school programming. The

results of this study would indicate that the use of an educational services inventory (ESI) provides an efficient means for analyzing school program inputs.

Similar studies should be undertaken to specifically investigate the extent and nature of educational services from a sample of school districts throughout the United States. Although data are compiled on certain comparative kinds of expenditures, specific information on the extent and nature of educational services across the nation could provide useful data for school management purposes.

Some future studies should focus on qualitative measures of output for educational services. In many cases, it appears that the measure of quality would involve service-consumer judgements. However, for services such as guidance and counseling, it is imperative that the service provides what it purports to provide.

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# APPENDIX (A)

November 6, 1974

The enclosed survey instrument is intended to provide partial information for a doctoral dissertation study of educational services provided in Michigan's K-12 public schools. The completed study will make no reference to any individual schools or school districts; rather, the relationship between groups of schools as they rank on selected cost-related factors and the educational services provided will be the items of interest.

Although some of the study data are already available through existing reports, specific information regarding school health and testing programs is needed to complete the information.

As the statisticians emphasize the necessity of high percentage returns on questionnaires of this nature, I am hoping that you will take a few minutes to complete, or have someone in your system knowledgeable of the services complete, the enclosed form and return it in the stamped, self-addressed envelope no later than November 20, 1974.

Sincerely yours,

William J. Seiter
Superintendent

WJS

Enclosures: School health/testing survey form
Stamped, self-addressed envelope

(Appendix B)

EDUCATIONAL SERVICE INVENTORY

School District_____

SEV_____Enrollment_____

EDUCATIONAL SERVICE:

Teaching
1. Average teachers salary
2. Percent of teachers with MA degrees
3. Number of teachers per 1000 pupils
4. Average years of experience for teachers

Administration
1. Superintendents salary
2. Years of experience of superintendent
3. Academic degree of superintendent
4. Average salary for secondary principal
5. Average years experience for secondary principal
6. Average salary for elementary principal
7. Average years experience for elementary principal

Guidance & Counseling
1. Average salary for guidance and counseling personnel
2. Average years of experience for guidance and counseling personnel
3. Average academic degree for guidance and counseling personnel
4. Number of guidance and counseling personnel per 1000 pupils
5. Expenditure per pupil for guidance and counseling

Testing
1. Number of standardized tests administered in terms of grades
2. Scoring method in terms of hand scored verus machine scored
3. Use made of test results in terms of the extent to which tests are used in educational planning

Health Services
1. Health services provided
2. Expenditure per pupil for health
3. Percent of General Fund spent for health

Library
1. Librarians average salary
2. Librarians average academic degree
3. Librarians average years of experience
4. Librarians per 1000 pupils
5. Expenditure per pupil for library services

Curriculum Consultants

1. Consultants average salary
2. Consultants average years experience
3. Consultants per 1000 pupils
4. Expenditure per pupil for curriculum consultants

Adult Education

1. Expenditure per pupil for adult education
2. Percent of General Fund spent for adult education

Summer School

1. Expenditure per pupil for summer school
2. Percent of General Fund spent for summer school

Transportation

1. Expenditure per pupil for transportation
2. Percent of General Fund spent for transportation

Attendance

1. Expenditure per pupil for attendance
2. Percent of General Fund spent for attendance

3. Please indicate the usual method used for scoring the standardized tests administered by your school district by marking an "X" in all of the appropriate boxes where the scoring method corresponds with the type of test. (Leave all other boxes blank.)

| SCORING METHOD | TYPE OF TEST | | | | |
|---|---|---|---|---|---|
| | Readiness | Achievement | Scholastic Aptitude/ Intelligence | Differential Aptitude | Vocational Preference or Interest Inventories |
| Hand Scored | | | | | |
| Hand Scored w/ class profiles | | | | | |
| Machine Scored | | | | | |
| Machine Scored w/ printouts for class norms | | | | | |

4. Please indicate the general or usual use made of the standardized test results by marking an "X" in all of the appropriate boxes where the usage of the results corresponds with the types of tests administered. (Leave all other boxes blank.)

| USAGE | TYPE OF TEST | | | | |
|---|---|---|---|---|---|
| | Readiness | Achievement | Scholastic Aptitude/ Intelligence | Differential Aptitude | Vocational Preference or Interest Inventories |
| Maintained essentially for teacher use | | | | | |
| Used by teachers & counselors with students for Ed. plan. | | | | | |
| Used by teachers & counselors with students & parents for Ed. plan. | | | | | |
| Used as an integral part of curriculum planning & revision | | | | | |

## APPENDIX (B)

School District Name _____

1972-73 Enrollment _____ SEV $_____ Q _____

1. Please indicate by marking an "X" in all of the boxes where the following health related services are provided annually by your school district as part of the regular school health program. (Leave all other boxes blank)

| SERVICES PROVIDED | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vision Screening | | | | | | | | | | | | | |
| Hearing Screening | | | | | | | | | | | | | |
| Dental Examinations | | | | | | | | | | | | | |
| Physical Examinations | | | | | | | | | | | | | |

2. Please indicate by marking an "X" in all of the unshaded boxes where standardized tests (EXCLUDING MICHIGAN ASSESSMENT TESTS AND TEACHER-CONSTRUCTED TESTS) are administered annually as part of the regular school testing program.

| Grade | Readiness | Achievement | Scholastic Aptitude/Intelligence | Differential Aptitude | Vocational Preference or Interest Inventories |
|---|---|---|---|---|---|
| K | | //////////// | //////////////// | //////// | //////////////// |
| 1 | | | //////////////// | //////// | //////////////// |
| 2 | ///////// | | //////////////// | //////// | //////////////// |
| 3 | ///////// | | | //////// | //////////////// |
| 4 | ///////// | | | //////// | //////////////// |
| 5 | ///////// | | | //////// | //////////////// |
| 6 | ///////// | | | //////// | //////////////// |
| 7 | ///////// | | | //////// | //////////////// |
| 8 | ///////// | | | | |
| 9 | ///////// | | | | |
| 10 | ///////// | | | | |
| 11 | ///////// | | | | |
| 12 | ///////// | | | | |

## APPENDIX (C)

MICHIGAN ASSOCIATION OF SCHOOL ADMINISTRATORS

421 West Kalamazoo
Lansing, Michigan 48933

Telephone 371-5250
Area Code 517

Dear Friend:

You have many demands on your time and more questionnaires and survey instruments cross your desk than you can conscientiously review. Let me urge you to give special attention to the attached materials from one of our good colleagues, Montcalm Intermediate Superintendent "Bill" Seiter. It will take a fifteen minute investment of your time, but I sincerely believe the completed study will be an important document for all of us interested in public education in Michigan.

Sincerely yours,

Donald M. Currie
Executive Director

DC