

THE UNIVERSITY OF MANITOBA
AN ANALYSIS OF THE EDUCATIONAL EFFORT
OF THE PROVINCE OF MANITOBA

by

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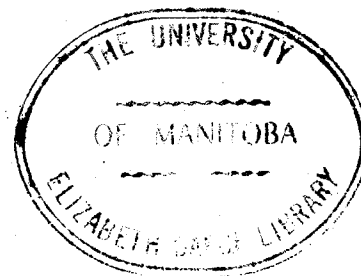
A THESIS

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ABSTRACT

The purpose of this study was to analyze the educational effort of the Province of Manitoba. The period selected for this study was 1961 to 1968 inclusive.

The educational effort was examined on the basis of the province's financial support for public elementary and secondary education. The measures of educational effort employed in this study were based on comparisons of educational expenditure and ability to pay. A secondary measure was based on income elasticity.

A comparison of net operating school expenditures and municipal expenditures shows that from 1966 to 1968 the net operating expenditures rose from 54.27 per cent to 69.60 per cent of municipal expenditures.

Net operating school expenditures per pupil rose gradually from 3.77 per cent of equalized assessment per pupil in 1961 to 4.38 per cent in 1965.

Net operating expenditures were 3.37 per cent of personal income in 1961, fluctuated up and down until 1965 then rose rapidly to 3.59 per cent in 1966 and 4.10 per cent in 1967.

In 1961 net operating educational expenditures per pupil were 16.13 per cent of personal income per capita. This ratio fluctuated up and down and reached 15.51 per cent in 1966 and

17.57 per cent in 1967.

The elasticity of demand for education establishes that for the period from 1961 to 1967 each 1.00 per cent increase in personal income was accompanied by a 1.69 per cent increase in total educational expenditure.

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CHAPTER I

THE DEVELOPMENT OF THE STUDY

I. INTRODUCTION

Expenditures for education have been one of the major problems in Canada in the last quarter century. The problem is that as education costs have risen, so has the public reaction against increased realty taxation. Total spending on formal education and vocational training increased nearly seventeen-fold from \$351.8 millions in 1947 to an estimated \$5,931.0 millions in 1968.¹ This represents an estimated annual gain of 14.8 per cent.

The Canadian Teachers' Federation has been studying education finance and reports as follows:

An estimated 20 per cent of the increase in school board operating costs between 1956 and 1966 was attributed to growth in enrolments, 25 per cent to rising prices and the remaining 55 per cent to a variety of factors including the upgrading of qualifications of the teaching profession, reduction in pupil-teacher ratios, the addition of auxiliary services, etc.²

The form of local support for education through property taxation was at one time considered adequate for educational expenditures. In recent years, however, property tax has not been sufficient for the ever growing educational needs of the country. This problem has forced the provinces to search for new

sources of revenue. Many provinces now use income tax, sales tax, liquor and tobacco tax to help finance the huge expenditures.

School administrators need special information on price and quantity change in providing the variety of new services in educational systems. Administrators must be aware of the effects of enrolments, inflation and educational improvements on revenues and expenditures. Administrators need a sophisticated examination of efforts that communities make for education of their young.

Educators have become concerned with index numbers as a means of analyzing more clearly the many facets of educational effort. This information will help them to cope more adequately with the many new problems that they are encountering in these times of rapid progress in all sectors of the learning environment.

It was the intention of this study to utilize indexes of wealth, ability and effort to analyze the educational expenditures in Manitoba for the years 1961 - 1968.

II. THE PROBLEM

The purpose of this study was to measure the financial educational effort in the province of Manitoba.

The research sought to present and analyze relevant provincial statistics and to evolve four general indexes that would evaluate the educational effort in the province. The

fourth index was selected for a further detailed analysis and developed into a composite index. This process consisted of the application of a series of sub-indexes selected to assess more closely the effort of the province in particular areas of educational spending.

The four general indexes employed in this study were:

1. educational expenditure as a percentage of municipal expenditure;
2. educational expenditure per pupil as a percentage of equalized assessment per pupil;
3. educational expenditure as a percentage of total personal income;
4. educational expenditure per pupil as a percentage of personal income per capita.

The composite index included sub-indexes relating to specific educational expenditure categories. These expenditure categories were:

1. instructional services (salaries),
2. instructional supplies,
3. maintenance,
4. administration.

III. ASSUMPTIONS

This study is based on the following assumptions:

1. In considering educational expenditures for the province, current operating expenditures for salaries, instructional supplies, maintenance and administration bear the most direct relationship to actual financial effort communities of the province are making.
2. Enrolment figures contained in the Annual Report, Department of Youth and Education, accurately depict enrolment for the school year.
3. Population figures reported by the Dominion Bureau of Statistics, Census Division are accurate.
4. Equalized assessment figures and municipal expenditure figures in annual reports of the Department of Municipal Affairs are accurate.
5. Expenditures per pupil for instruction, instructional supplies, maintenance and administration compared with personal income per capita constitute a composite index of educational effort.

IV. IMPORTANCE OF THE STUDY

Measuring of educational effort can be an important guide to school administrators. These measurements can assist them to analyze critically the financial aspects of school systems and

can guide them to improved school programs.

If knowledge of educational effort of other communities, and of the province as a whole, is made available to division administrators, this again will help them to assess their effort.

This study is one of six companion studies of educational effort. The other five are concerned with the educational effort in single enterprise communities in Manitoba and Ontario. It is anticipated that comparisons of educational effort among these communities could be made. It is further anticipated that the composite index could be applied to other communities within the province. An important aspect of this application of the composite index is the development of provincial norms in this study, against which the educational effort of particular communities may be cast.

Data acquired in the utilization of the various indexes may also be used to advantage in studying problems related to educational effort such as pupil retention, pupil performance, teacher turnover and home environment.

When educational administrators have a clear analysis of the efforts that their communities and other related communities have been making over the years, they can inform their general public. The enlightened general public would show more interest and give more support to their schools.

V. DEFINITION OF TERMS

Educational and financial terms that are used in this study will be used in ways commonly accepted within these disciplines. Where there may be some doubt or variation, an explanation or footnote expands on the matter.

Terms, basic to the study however, and for which a search of the existing literature was made, are herein defined as the writer wishes them to be accepted for the purpose of this study.

Educational burden is the relative number of children who must be educated. The actual educational burden consists of the enrolment in the public schools in relation to the population. Potential educational burden consists of the population aged 5 to 19 in relation to the total population.

Wealth refers to total provincial resources as they may be measured by income and property valuation.

Ability refers to the economic resources or wealth the province may command in relation to its various needs. Examples of ability are: (1) the total income of the province in relation to its population; (2) equalized assessment of the province per pupil.

Effort in this study is a ratio of total provincial expenditure for public elementary and secondary education to provincial wealth.

VI. SOURCES OF DATA

The major sources of data for this study were the Dominion Bureau of Statistics, financial statements of the Department of Youth and Education, of the Department of Municipal Affairs of the Province of Manitoba.

VII. DELIMITATIONS

Statistics on population, equalized assessment, personal income, revenue and expenditures employed in the fashioning of the indexes were confined to the years 1961 through 1968.

The analysis of the educational effort in this study was restricted to the financial effort on behalf of public elementary and secondary schools of the province of Manitoba.

The research limited itself to two major investigations:

1. a study of educational expenditures in the province;
2. a study of the wealth of the province.

VIII. LIMITATIONS

Lack of certain statistics made it impossible to produce some meaningful comparisons in this study.

Expenditures in this study were not calculated for elementary and secondary pupils separately because the Department of Youth and Education does not make separate calculations for these expenditures.

Population figures, except for the census years of 1961 and 1966, are estimates only based on deaths, births, etc. As a result, calculations of burden and income per capita will not be perfectly accurate.

Any measure of educational effort has serious limitations. On the one hand, the school district or division receives provincial grants for a large portion of its school expenditures and on the other hand, it pays taxes, such as a sales tax, into the provincial treasury for provincial education expenditures. As a result it is impossible to measure accurately the effort that is made locally for all education purposes.

IX. ORGANIZATION

Chapter II gives a brief resume of research that has been done on investment in education; this includes a study of financial effort, burden, wealth and ability. This chapter concludes with a section on index numbers, stating how they have been used to measure expenditures in education.

Chapter III presents a brief description of education finance in Manitoba with particular reference to the formation of Unitary divisions and the foundation program.

Chapter IV gives a description of the data used in the study. The procedures of calculation, especially the development of the indexes, are described.

Chapter V begins with a brief statistical survey of

Manitoba, including population, assessment, income, municipal and educational expenditures. There follows the analysis of educational effort of the province by showing net operating expenditures in general and the indexes of effort specifically.

Chapter VI completes the study and includes a general summary of the study, including major findings, a discussion of conclusions and inferences, as well as recommendations and implications for further research.

FOOTNOTES FOR CHAPTER I

¹Canadian Teachers' Federation, Educational Finance in Canada (Ottawa: Canadian Teachers' Federation, 1969), p. 2.

²Ibid., p. xiii.

CHAPTER II

REVIEW OF THE LITERATURE

I. INTRODUCTION

In Canada education finance has been one of the major problems confronting citizens, particularly since World War II. Canada, in the past quarter-century, has experienced an increase in the birth rate, a rapid upsurge in the flow of immigrants, an emphasis upon the retention of pupils in high school, and several other factors that have placed severe strains upon the financial abilities of local administrative units to meet their share of the ever-increasing educational costs. In addition spiralling inflation and the increasing demand for more services will continue to increase the costs of education.

Many economists and educators have considered the importance of education to the development of the nation; but as Coombs points out:

It is perhaps not unfair to say that political leaders and the general public almost everywhere are somewhat schizophrenic on the subject of education. They have high praise for the virtues of education; they rely heavily upon it to help the new generation solve great problems to which the older generation has found no solution; but when it comes to spending more money their deeds fail to match their words.¹

In spite of the fact that education spending has been rising dramatically, there may be some truth to Coombs' statement. The public does, indeed, have high praise for the virtues of

education but public protest against rising taxation is increasing.

Because education is so important to the nation, educators must be able to make quantitative and qualitative measures of it; they must be able to analyze the efforts that school divisions, provinces and the nation are making for this investment.

Educators should know the percentage of the budget that each expenditure category assumes. They must know where the greatest needs are; where the deficiencies are, and where the increases in costs are.

II. WEALTH AND ABILITY

The concepts of wealth and ability are both important in assessing the education effort of a community. A community needs some base of wealth from which to draw if it is to educate its young citizens. A wealthy community should be able to provide quite easily for the basic needs of education, whereas a less wealthy community could face definite hardship in attempting to provide these basic needs. Wealth is an indicator of ability but there is no accepted single way of measuring it. Salisbury has studied ability-to-pay theory and points out:

In the early days of ability-to-pay theory, property was the yardstick of ability. With the industrialization of society and a more complex economy, a successive shift occurred, emphasizing income rather than property as the

index of ability. The personal income tax came to be considered as the most equitable tax . . .²

Variations in ability among communities has led to variations in expenditure but, as Mort and Reusser point out, there are also "variations in vigor of local support"³ that have led to variations in expenditures. That is, communities with a given ability vary in effort. These differences

. . . make it possible for communities having better than average ability and better than average vigor for support to create laboratories for shaping better education. They provide the pilot plants, the lighthouses.⁴

Miner⁵ suggests many ways of determining ability.

Personal income per capita, equalized value of property per capita and size of grants-in-aid would merely head a long list of criteria. If it could be determined, net production value might be used. Retail sales could be analyzed to determine the percentage that luxury items constitute in relation to total sales.

He found:

The most appropriate measure of ability to pay for education is probably the total income of the community in relation to its population. The distribution of income and wealth is also important, as is the amount and form of wealth.⁶

The Canadian Teachers' Federation sponsored national conferences on education finance in 1965 and in 1967, and in connection with these conferences produced several monographs and papers. These monographs concern themselves with "effort" as part of their economic studies and state that "educational effort can be calculated by using either Gross National Product or

Personal Income as measures of wealth."⁷

Gross National Product is an important base upon which to calculate ability. In the absence of a Gross Provincial Product it is usual to use personal income as the base for calculating ability. When the total personal income of the residents of an area is known, along with the number of residents, it is possible to determine the per capita income.

Disposable income is a concept advocated by some to determine ability, but a difficult figure to obtain for the individuals who make up a community. Bellan describes disposable income as, "the aggregate of money income which people have left after paying their personal income tax."⁸

The Canadian Teachers' Federation points out that all measures of effort make what may not be a valid assumption, namely "that it takes no greater effort of sacrifice to spend a given amount for education out of the first dollar of income than out of the last dollar."⁹

In his book, Investment in Canadian Youth, J. E. Cheal employs net personal disposable income per "weighted" school age child as his index of ability.¹⁰ That is, the relationship between the need and the financial resources available to meet it constitutes the variable of ability. Cheal chooses to employ a weighting factor in his study. By multiplying the number of high school children by a factor of 1.3 he makes allowance for the higher cost of educating secondary students as compared with

elementary students.

There are some writers who tend to agree that the derivation of a valid index for taxpaying ability is not for amateurs. However, some attempts at simplifying procedures have been made. For those who prefer to use the method of equalized property tax, Sorenson reports the use of a "sales ratio" on assessments in Colorado.¹¹ The assessed value of a piece of property is always set at a standard percentage of the current sale price or market value. The assessment then rises or falls immediately, and proportionally, with the market value of the property.

Roe L. Johns prefers income tax to property tax for a measure of fiscal capacity, because the National Income from taxes on property in the United States dropped from twenty per cent in 1929, to ten per cent in 1963.¹²

Marvin C. Alkin suggests:

An illuminating index of capacity of a state to support education is the income left to its people after payments for personal taxes and for the basic necessities for food, clothing and shelter. This residual income may be divided by the number of school-age children in the state in order to find the total personal income available per child for all additional expenditures of every kind, public and private.¹³

The National Educational Association suggests subtracting \$800 per person for food, clothing and shelter.

J. P. Francis, writing in School Progress, emphasizes that:

The major factor in the country's ability to meet the financial needs of education in the 1970's is the rate of

economic growth achieved, priority given to educational expenditures by various levels of government and the willingness of individuals and business to forego other expenditures.¹⁴

This is another example of the concern for the costs of education and the ability of the country to pay.

H. P. Moffatt concluded his study, Educational Finance in Canada, with these remarks:

. . . The task in educational finance is not to find the money, or to devise methods of distributing and spending it. The task is to develop in people attitudes and opinions that will lead to effective support for our schools.

To do this we must first of all have more reliable and complete information on the financing of our schools and on public finance in general. Much of this information must come from research, conducted in Canada and applied to Canadian conditions.¹⁵

III. BURDEN AND EFFORT

According to the Canadian Teachers' Federation, "the educational burden is the relative number of children who are being educated at any given time."¹⁶

As an indicator of the national burden the Economic Council of Canada reports:

Canada now (1967) has, in relation to its total population, one of the largest school populations in the world. The great post-war baby boom in Canada, which was relatively larger than that in the United States or elsewhere, has been a very rapidly rising proportion, over the past decade and a half, of those of secondary school and post secondary school age who are in school. Although these enrolment ratios are still significantly lower than in the United States, they have been rising faster in Canada since the mid 1950's and particularly since the beginning of the 1960's.¹⁷

Here we see that both the need and the burden are large and

increasing rapidly.

The general consensus among several leading researchers is that tax burdens are high and political resistance to applying increased local resources to education is on the rise. It is also felt that the Federal Government should compensate for provinces with lower income and higher educational burdens. This would help such a province as Newfoundland which, in 1966, had nearly twice as many children per 1,000 of its labour force (1,133) as did Manitoba (581), British Columbia (587) or Ontario (589).¹⁸

Knowing the educational effort and having an effective means by which it can be measured, are vital to an understanding of a community's commitments to education. There are several definitions of effort, but they all seem to suggest a ratio of some measure of expenditure compared with some measure of ability to spend. Perhaps the most commonly used measures of effort, as suggested by Johns and Morphet, is the percentage of income of the people represented by gross expenditures for schools.¹⁹ It is possible that communities with the least ability have been making as great an effort to support schools as communities with the greatest ability.

The method of measuring effort to be employed is dependent on the availability of data. Cheal shows three measures which can be used to advantage:

1. The total school board revenues as a percentage of personal disposable income minus a basic \$500 for necessities;
2. The total provincial and local expenditures per pupil in average daily attendance as a percentage of personal disposable income per pupil in average daily attendance;
3. Total school board expenditures on a weighted-school-age child basis as a percentage of personal disposable income per weighted-school-age-child. ²⁰

Commonly used measuring guides according to P. L. Maltby

are:

1. Educational expenditures per pupil or per capita;
2. Educational expenditure as a percentage of gross national product, total personal income or personal disposable income;
3. Educational expenditure as a percentage of total government expenditure;
4. Income elasticity of demand for education;
5. Other measures using the time factor. ²¹

H. P. Moffatt states:

A more significant index of effort has been devised to include both the number of pupils enrolled and the total wealth available. This index is the number of cents per enrolled pupil for each million dollars of gross national product. In 1931 we spent \$1.40 of each million dollars of the gross national product for each child educated. In 1954, the corresponding figure was 81 cents. ²²

The Canadian Teachers' Federation reasons as follows:

The principal measure of effort . . . is the percent that expenditure for education is of personal income. This relationship is equivalent to the per cent that per capita expenditure is of personal income per pupil. By this method ability to support education is taken into account and effort alone is compared. Personal income has been used most frequently because it is the only available measure of wealth which is distributed by provinces. The preferable base, gross national product, has been used for comparisons at the

national level. Personal income is quite satisfactory, however, since it is a major component of gross national product.²³

Unfortunately there are weaknesses inherent in the concept of educational effort. The same may be said for the statistical tools that have been devised to measure it. Effort is usually interpreted as financial support, but accounting for the source and final disposition of all parts of every dollar spent is often impossible. For example, a measure of effort might involve a comparison of the amount spent on education with the amount spent on such goods and services as liquor or tobacco. This is a crude measure at best, because seldom is account taken of the high rates of tax on these goods and the proportion which eventually becomes educational revenue.

IV. INDEX NUMBERS IN EDUCATION

Index numbers have been in use for over two hundred years. It has not been until this century, however, that they have been used to any great extent. They were first used by economists to measure price changes of commodities. Inman, a Canadian economist, refers to the value and use of index numbers in this way:

Fortunately, statisticians have developed methods of estimating the degree of price level fluctuation from one period to another. The instrument utilized to find the amount of price level rise or fall is known as an index number. An index number is a statistical device used to measure quantitative changes in groups of data.²⁴

The expanding need for special information on price and quantity changes has led to the compilation of a wide variety of index numbers by economists in both governmental and private agencies. Economists and statisticians in the last few years have devised indexes on such items as export-import prices, construction prices, consumer prices and transportation rates. Index number techniques have also been used in such fields as accounting and engineering, as well as education.

Several studies, utilizing index numbers, have been compiled in the field of education, especially in the last fifty years. The index numbers have basically been of two types:

1. Actual amount and/or percent of increase or decrease in expenditures over a period of two or more years.
2. Percentage of increase or decrease in costs as they are influenced by rising or declining costs of living.²⁵

Indexes on teachers' salaries, primarily for the purpose of comparison with the cost of living, were computed very early in this century. Leonard P. Ayres was among the first to develop a simple index of educational expenditures as early as 1910.²⁶ He compiled ten sets of data, all related to public day schools, and used them in a final index number. Each index was brought into a relationship with a common basis of 100. The ten were then added and averaged and this became his composite index.

This method utilized a simple average with equal weights for all components. No ratios were computed to indicate relative importance. There were no criteria for the selection of the ten

items except that each of the ten were interrelated and inter-dependent.

In 1938, the Research Division of the National Education Association compiled an index that compared school costs between 1914 and 1918.²⁷ The general procedure was to base all the measurements of changing costs upon the cost of the school program in any single selected year and to calculate what the same program would have cost in other years.

The most recent "Cost of Education Index" was compiled by Dr. Orlando P. Furno for School Management Magazine. This index consists of a set of data on per pupil expenditures and related averages in standard budget categories in school districts. These school districts were classified by geographic region and size of school district. Wasserman²⁸ states that these data constitute an index in the sense that they have been compiled in the form of ratios and averages and that they may be used to compare the district's own expenditures.

Furno's Index is designed to help experienced administrators and neophyte Board members find and use significant figures for their own areas that will permit a comparison of a district's overall costs with those of other districts in its own geographic region and size group. A comparison of expenditures for specific items such as transportation, teachers' salaries, administration, food service, etc., may help in the preparation of a budget.

The Furno approach could be used in Manitoba for a

comparison and evaluation of the efforts local taxpayers are making for the education of their children, and it could be used for a comparison of spending with districts whose wealth--or ability to pay--is similar. Some writers feel it is essential that statistical procedures be employed that utilize economic factors.²⁹ Among these are listed sales tax receipts, amount of passenger automobile licence tax paid, value of farm products, number of gainfully employed workers for each community, or similar measures which might predict the relative proportion of the true value of property in each community, since most school districts can levy taxes only on property.

Per capita figures have usually been used in preparing comparative data because such figures are the most easily understood and the most universally accepted.

The validity of using indexes as measures of property tax-paying capacity has been questioned. Some economists³⁰ prefer inferring fiscal capacity from income estimates in spite of limitations of income estimates.

H. P. Moffatt states that:

Almost without exception, students of public finance reject the property tax in principle and accept it as inevitable. It has the benefits of directness and certainty but it is only indirectly related to the basic principle of ability to pay.³¹

V. SUMMARY

This chapter was devoted to a study of literature related to ratios and relationships in educational finance.

Educators are becoming increasingly concerned with and knowledgeable in educational finance.

In Canada, much of the educational load is placed directly on local taxpayers. If meaningful statistics are to be made available, it is necessary to look very closely at educational spending at the local level, and compare it with the fiscal ability of that same community.

The techniques most commonly used to assess and compare factors related to educational expenditures involve indices, and coefficients of elasticity.

The independent variables, wealth and ability, were considered in relation to the dependent variables of burden and effort.

The writers vary in their precise definitions of the variables, and there are slight variations in the ways they are applied, but there is agreement that educational effort may be expressed in financial terms by a comparison of amounts spent on education and the money available.

A review of the use and value of index numbers in education indicated that they have not been extensively used.

until fairly recently. However, as more and more research is being done in educational finance, more use is being made of index numbers.

FOOTNOTES FOR CHAPTER II

¹Phillip H. Coombs, "Educational Planning in the Light of Economic Requirements," as quoted by Morphet, Johns and Reller, Educational Organization and Administration, p. 496.

²C. Jackson Salisbury, "Ability to Pay Theory as Related to School Finance," The Theory and Practice of School Finance, Warren E. Gaurke and Jack R. Childress, editors (Chicago: Rand McNally and Company, 1967), p. 47.

³P. R. Mort and W. C. Reusser, Public School Finance (New York: McGraw-Hill Book Company, 1951), p. 110 citing American Association of School Administrators, Twenty-Sixth Yearbook, pp. 281-282.

⁴Ibid.

⁵Jerry Miner, Social and Economic Factors in Spending for Public Education (Syracuse: Syracuse University Press, 1963).

⁶Ibid., p. 75.

⁷Canadian Teachers' Federation, Educational Finance in Canada (Ottawa: Canadian Teachers' Federation, 1969), p. 73.

⁸Ruben C. Bellan, Principles of Economics and the Canadian Economy (Toronto: McGraw-Hill Book Company, 1963), p. 421.

⁹Canadian Teachers' Federation, op. cit., p. 73.

¹⁰John E. Cheal, Investment in Canadian Youth (Toronto: The Macmillan Company of Canada, 1963), p. 76.

¹¹K. M. Sorenson, "Measuring Local Ability in Colorado," Trends in Financing Public Education (Washington, D.C.: Committee on Educational Finance, National Educational Association, 1965), p. 106.

¹²R. L. Johns, "Indirect Measures of Local Ability to Support Schools," Trends in Financing Public Education, op. cit., p. 94.

- ¹³M. C. Alkin, "Measurement of State Effort to Support Public Education," Committee on Educational Finance, op. cit., p. 87.
- ¹⁴J. P. Francis, "Financing Education: The National Problem," School Progress, November, 1965, p. 38.
- ¹⁵H. P. Moffatt, Educational Finance in Canada (Toronto: W. J. Gage Limited, 1951), p. 89.
- ¹⁶Canadian Teachers' Federation, Educational Finance in Canada, op. cit., p. 55.
- ¹⁷Economic Council of Canada, The Canadian Economy from the 1960's to the 1970's, Fourth Annual Review (Ottawa: The Queen's Printer, 1967), p. 64.
- ¹⁸Canadian Teachers' Federation, Educational Finance in Canada, op. cit., p. xiv.
- ¹⁹R. L. Johns and E. L. Morphet, Financing the Public Schools (Englewood Cliffs: Prentice-Hall, 1960), p. 158.
- ²⁰Cheal, op. cit., p. 78.
- ²¹P. L. Maltby, "Measuring Your Education Effort," School Progress, Vol. 34, No. 9 (September 1965), p. 32.
- ²²Moffatt, op. cit., p. 26.
- ²³Canadian Teachers' Federation, Educational Finance in Canada 1946-1956 (Ottawa: Canadian Teachers' Federation, 1954), p. 31.
- ²⁴M. K. Inman, Economics in a Canadian Setting (Toronto: The Copp-Clarke Publishing Company, 1959), p. 228.
- ²⁵T. D. Carter, "The Development of a Procedure for Computing a Cost of Education Index for the Public Schools for the State of Texas" (Unpublished doctoral thesis, University of Texas, 1966), p. 30.
- ²⁶Ibid., p. 32.
- ²⁷William Wasserman, Education Price and Quantity Indexes (Syracuse: Syracuse University Press, 1963), p. 110.
- ²⁸Ibid., p. 126.

²⁹E. L. Morphet, R. L. Johns, and T. L. Reller, Educational Organization and Administration: Concepts, Practices and Issues (Englewood Cliffs, New Jersey: Prentice-Hall, 1967), p. 515.

³⁰Arvid J. Burke, "Local, State and Federal Financing of Locally Operated Elementary and Secondary Schools," The Theory and Practice of School Finance, Warren E. Gaurke and Jack R. Childress, editors (Chicago: Rand McNally and Company, 1967), p. 132.

³¹Moffatt, op. cit., p. 61.

CHAPTER III

THE PROVINCE OF MANITOBA

In 1968 the Dominion Bureau of Statistics estimated the population of the Province of Manitoba to be 971,000. Table I gives the provincial population for the years 1961 to 1968 and indicates an annual rate of growth of less than one per cent. Between the census years of 1961 and 1966 there was an increase in population of 4.49 per cent, from 921,686 to 963,066.

In 1966, over half the province's population was urban. There were 646,048 living in urban centres of which 500,258 were in Metropolitan Winnipeg. There were 317,018 living in rural centres, about evenly divided between farm and non-farm. This information is summarized in Table II.

FINANCING EDUCATION

General

The public schools of Manitoba are financed partly by municipal funds and partly by provincial funds.

Prior to 1967 in all school districts, and today in all non-unitary divisions, financing is based on Manitoba Regulation 38/57 as amended by Manitoba Regulation 38/58. This regulation details the "combined grant" which is the guaranteed annual support which may be paid to a school district

TABLE I
POPULATION OF MANITOBA
1961 - 1968*

Year	Population
1961	921,686
1962	936,000
1963	949,000
1964	959,000
1965	965,000
1966	963,066
1967	963,000
1968	971,000

* The 1961 and 1966 figures are the census statistics for those years. The other figures are estimates based on births, deaths, etc.

Source: Canada Year Book, 1969
Edition.

TABLE II
RURAL AND URBAN POPULATION OF
MANITOBA 1966

Urban 1,000 - 9,999	93,123	
Urban 10,000 - 29,999	52,667	
Urban 100,000 or over	500,258	
TOTAL URBAN		646,048
Rural, non-farm	157,146	
Rural, farm	159,872	
TOTAL RURAL		317,018
TOTAL RURAL AND URBAN		963,066

Source: Canada Year Book, 1969 Edition.

in respect of each of its authorized number of teachers, by the school district or the local government district, and the Provincial Treasurer.

The number of combined grants that may be earned by a school district which does not operate a secondary school, will be the lesser of:

- (a) the number of teachers employed, or
- (b) a number calculated on the following basis:

enrolment at least 7

but under 40 - 1 combined grant;

enrolment at least 40

but under 80 - 2 combined grants;

enrolment 80 or over - divide enrolment by 30 and
add 1 grant if remainder is
20 or over.

The number of combined grants that may be earned by a school district which does operate a secondary school will be:

- (a) the number of grants that may be earned for the elementary department calculated according to the above formula,

together with

- (b) the number of grants that may be earned for the secondary department, which number shall be equal to the number of secondary teachers employed or a number calculated on the following basis, whichever is the lesser:

Grades	Enrollment of:	Number of Combined Grants:
IX-XI	at least 10 but under 25	1
	at least 25 but under 50	2
	at least 50 but under 90	3
	90 or over - divide enrollment by 25 and add 1 if remainder is 15 or more	
IX or X-XII	at least 25 but under 40	2
	at least 40 but under 65	3
	at least 65 but under 115	4
	115 or over - divide enrollment by 25 and add 1 if remainder is 15 or more.	

There are special provisions for districts with classes for mentally retarded children and protection for schools with technical departments.

The combined grant for a school year of two hundred days is \$2,500.

Secondary schools receive an additional grant of \$1,250 per teacher.

Junior high schools receive an additional grant of \$875 for each grade IX teacher.

In addition to the combined grants there are Transportation Grants per mile of 60 per cent of the average cost per mile throughout the province up to but not exceeding 75 per cent of the school district's actual cost.

There are miscellaneous grants towards library and laboratory equipment (50 per cent of costs up to \$15 per teacher), technical education, equipment, evening school, etc.

The Foundation Program

In 1967 Manitoba Regulation 42/67 came into effect which provided a different basis for grants to unitary divisions.

Unitary divisions are those where one school board administers all public education in the division (elementary and secondary) and the Manitoba Regulation 42/67 gives effect to the Provincial Foundation Program.

Grants are payable according to the number of authorized teachers for salaries, maintenance, administration, supplies and text books, and transportation. In addition there are capital grants re. school buses, etc.

The number of authorized teachers for a unitary division is the total of:

- (a) the authorized number of teachers for elementary grades
(obtained by dividing the average enrolment of students in elementary grades by 28);
- (b) the authorized number of teachers for secondary grades
(obtained by dividing the average enrolment of students in secondary grades by 23);
- (c) the authorized number of teachers for special classes
(obtained by dividing the average enrolment in the

special class by 13);

- (d) the authorized number of teachers for occupational entrance classes (obtained by dividing the average enrolment in the occupational entrance class by 20);
- (e) the authorized number of principals, assistant principals, supervisors and assistant superintendents (obtained by dividing the basic number of teachers by 10);
- (f) the superintendent for the unitary division.

Grants towards salary are shown on Table III.

Grants towards maintenance are \$1,250 per authorized teacher.

Grants towards administration are \$450 per authorized teacher.

Grants towards supplies are \$60 per authorized teacher for library and reference books and \$390 per authorized teacher for supplies not including text books.

Grants pay the full cost of authorized text books.

Grants towards transportation are \$175 per year for each pupil transported.

All capital expenditures are authorized and paid by the province.

The purpose of the Foundation Program is to equalize educational opportunities for all children in the province. It has the effect of increasing the share of educational expenditure supported by provincial funds and thus decreasing the share paid by municipal ratepayers.

TABLE III
SCHEDULE "A" OF SALARY GRANT TABLE

Years of Experience	POAO	P1A1	P1A2	P1A3	P1A4	P2A4 or P1A5	P2A5 or P1A6	P2A6
0	2200	3700	4100	4500	5500	5900	6800	7700
1		3900	4300	4700	5700	6100	7100	8000
2		4100	4500	4900	5900	6400	7400	8400
3		4300	4700	5100	6200	6800	7800	8800
4		4500	4900	5400	6500	7200	8200	9200
5		4700	5100	5700	6800	7600	8600	9600
6		4900	5400	6000	7100	8000	9000	10000
7				6300	7500	8400	9500	10500
8					7900	8800	10000	11000
9					8300	9200	10500	11500
10							11000	12000

Source: Manitoba Regulation 42/67.

CHAPTER IV

METHODOLOGY

To analyze the educational effort of the Province of Manitoba for the years 1961-1968, it was necessary to obtain accurate information on population, school enrolment, municipal assessment and expenditures, personal income and school expenditures.

Population and Personal Income figures were obtained from the Dominion Bureau of Statistics. The population figures for 1961 and 1966 are official census statistics for those years. The other figures are DBS estimates based on births, deaths, etc. Personal Income figures were not available for 1968.

School enrolment and school revenue and expenditure figures were obtained from annual reports of the Department of Youth and Education. Prior to 1962 all enrolment statistics are based upon the June reports for the year concerned. Commencing with 1962 the statistics are based on October reports of the previous year. Starting in 1967 the revenues and expenditures of unitary divisions are reported separately and differently from non-unitary divisions. In 1967 there were nineteen non-unitary school divisions and in 1968 there were eight. Through consultation with officials of the Public Schools Finance Board it was possible to combine the figures for unitary and non-unitary divisions.

The equalized assessment figures were obtained from the Assessment Branch of the Department of Municipal Affairs.

Equalized Assessment is the taxable assessment on real property (land and buildings) plus grants in lieu of real property taxes.

The municipal expenditure figures were obtained from publications of the Department of Urban Development and Municipal Affairs. Prior to 1966 no information was published regarding total municipal expenditures for the province, but starting in 1966 a detailed accounting of municipal expenditures was published. The figures used in this study were taken from "General Fund Expenditures for the year ended December 31" of the respective yearly publication.

In the analysis of educational effort, relevant statistical data of the province were first presented. This was followed by a detailed analysis of net operating educational expenditures. These expenditures were for the categories of instruction, instructional supplies, maintenance, and administration. Categories of capital and transportation, as well as expenditures for texts and miscellaneous expenditures were not analyzed.

In the statistical presentation, population, school enrolment in total and as a percentage of total population were first considered. This was followed by a study of equalized assessment in total, and per pupil; and personal income in total and per capita. Assessment and income form the basis of the wealth of the province in this study.

Next was presented a detailed analysis of the net operating educational expenditures. This included statistics on total net operating expenditures, per pupil expenditures, expenditures paid from provincial funds and expenditures paid from municipal funds. It also included expenditures for the four categories of instruction, instructional supplies, maintenance and administration, in total and on a per pupil basis and as a percentage of total net operating expenditures.

These expenditures were then compared with municipal expenditures, equalized assessment per pupil and income per capita. It was from these comparisons that the indexes of effort were fashioned.

Index 1 expresses the relationship between school district net operating expenditures and municipal ordinary expenditures.

Index 2 shows the relationship between net operating educational expenditures per pupil and equalized assessment per pupil.

Index 3 shows the relationship between total net operating expenditures and total personal income.

Index 4 is the relationship between net operating expenditures per pupil and personal income per capita.

A detailed analysis was made of index 4. It showed the expenditures for the categories of instruction, instructional supplies, maintenance and administration, each as a percentage of

personal income per capita. These relationships may be referred to as sub-indexes. They make up parts of composite index 4.

Following the analysis of this index, a further comparison of income and expenditure was made. This comparison illustrated the per cent increase in total educational expenditure for a 1.00 per cent increase in total personal income and is called "income elasticity of demand for education."

CHAPTER V

DATA ANALYSIS

Two sets of data are presented in this chapter. The purpose of the first set is to present pertinent statistical information on the province of Manitoba in the years 1961 to 1968.

The purpose of the second set is to show specifically the financial effort for education that has been made by the school districts and school divisions collectively in the same period.

I. STATISTICAL DATA ON MANITOBA

Table IV shows the population and public school enrolment of Manitoba for the years 1961 to 1968. The population grew from 921,686 in 1961 to 971,000 (estimated) in 1968 whereas the school enrolment grew from 192,737 in 1961 to 231,640 in 1968. The table shows that population and school enrolment has increased gradually during this period. The public school enrolment was approximately 21 per cent of the population in 1961 and has increased to approximately 24 per cent by 1968. The growth in public school enrolment is shown graphically in Figure 1. The rate of growth is almost constant from 1961 to 1966. There is a less rapid rate of growth from 1966 to 1967 and then a more rapid rate between 1967 and 1968.

Table V presents information on equalized assessment in total and per pupil. It also shows the per cent increase or

TABLE IV
TOTAL POPULATION, SCHOOL ENROLMENT,
1961 - 1968

Year	Population	Enrolment	Enrolment as a Percentage of Population
1961*	921,686	192,737	20.9%
1962	936,000	199,121	21.3
1963	949,000	205,816	21.7
1964	959,000	212,458	22.2
1965	965,000	218,770	22.7
1966*	963,066	223,104	23.2
1967	963,000	224,531	23.3
1968	971,000	231,640	23.9

* The 1961 and 1966 figures are the census statistics for those years. The other figures are estimates based on births, deaths, etc.

Sources: Canada Year Book, 1969 Edition.

Annual Report, Department of Youth and Education, Province of Manitoba, for the year ending June 30, 1969.

Figure 1: Enrolment (thousands)

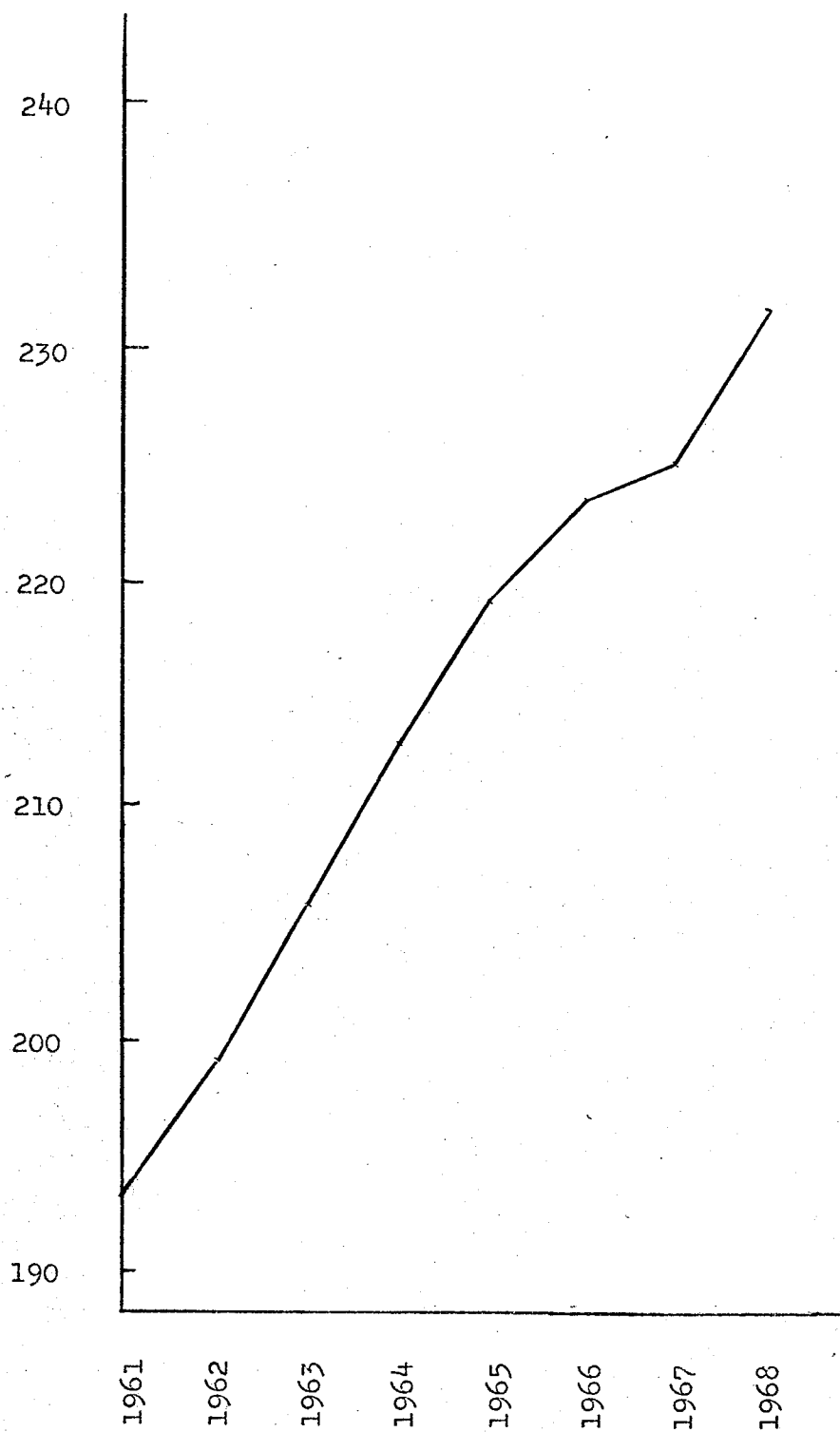


TABLE V
EQUALIZED ASSESSMENT, EQUALIZED ASSESSMENT PER PUPIL,
PER CENT INCREASE (DECREASE) PER PUPIL
1961 - 1968

Year	Total Assessment ,000	Assessment Per Pupil	Per Cent Increase (Decrease) Per Pupil
1961	1,247,310	6,472	
1962	1,285,917	6,458	(.22)
1963	1,335,503	6,489	.48
1964	1,381,192	6,401	(1.36)
1965	1,448,316	6,620	3.42
1966	1,533,151	6,872	3.81
1967	1,733,282	7,720	12.35
1968	1,823,265	7,871	1.96
1961-1968			21.62

Source: Assessment Branch, Department of Municipal Affairs,
Province of Manitoba.

decrease of assessment per pupil. The total assessment increased from \$1,247,310,000 in 1961 to \$1,823,265,000 in 1968. Through the years 1961 to 1968, assessment per pupil increased from \$6,472 to \$7,871--or 21.6 per cent. The greatest increase in assessment per pupil occurred in 1967 when the increase was 12.35 per cent. Two of the years (1962 and 1964) showed decreases in assessment per pupil. The 1967 increase is due to less rapid rate of growth of school enrolment for that year. The decreases in 1962 and 1964 were due to a decrease in the rate of expansion of the equalized assessment in those years.

Total personal income and income per capita for the years 1961 to 1967 are shown in Table VI. This income increased from \$1,395,000,000 in 1961 to \$2,231,000,000 in 1967. The per capita income increased from \$1,513 in 1961 to \$2,317 in 1967. The per cent increase from 1961 to 1967 in income per capita was 53.14, which was an average of 7.44 per cent per year.

Table VII shows total educational expenditures for the years 1961 to 1968, total municipal expenditures for the years 1966 to 1968 and the percentage increase of each from year to year. The figures for municipal expenses includes their share of education costs which was \$51 million in 1966, \$48 million in 1967, and \$60 million in 1968. Thus while the municipal expenditures went up 4.28 per cent in 1967, their share of educational expenditure went down 5.88 per cent. In 1968 municipal expenditures went up 13.94 per cent and this included a 25 per cent

TABLE VI

TOTAL PERSONAL INCOME IN MANITOBA, INCOME PER CAPITA,
 PERCENTAGE INCREASE IN INCOME PER CAPITA
 1961 - 1967

Year	Total Income \$,000,000	Income per Capita \$	Percentage Increase per Capita
1961	1395	1513	
1962	1578	1686	11.43
1963	1599	1685	0
1964	1725	1799	6.77
1965	1858	1925	7.00
1966	1997	2074	7.74
1967	2231	2317	11.72
Per Cent Increase Per Capita from 1961 to 1967		53.14	
Average Increase Per Year		7.44	

Source: Canada Year Book, 1969 Edition.

TABLE VII

TOTAL MUNICIPAL EXPENDITURES, 1966 - 1968,
TOTAL EDUCATIONAL EXPENDITURES, 1961 - 1968

Year	Municipal* Expenditures \$,000	Percentage Increase	Educational Expenditures \$,000	Percentage Increase
1961			60,569	
1962			64,711	6.84
1963			69,675	7.67
1964			74,364	6.73
1965			81,114	9.08
1966	132,217		92,042	13.47
1967	137,875	4.28	115,032	24.98
1968	157,105	13.94	136,238	18.43
Per Cent Increase from 1966 to 1968		18.82		48.02

* Prior to 1966 consolidated figures were not published.

Sources: Statistical Information Respecting the Municipalities of the Province of Manitoba and the Metropolitan Corporation of Greater Winnipeg; 1966, 1967, 1968.

Annual Report, Department of Youth and Education, Province of Manitoba for the Year Ending June 30, 1969.

increase in their share of educational expenditure.

Educational expenditure rose from \$60,569,000 in 1961 to \$136,238,000 in 1968, an increase of 124.93 per cent. The increase in educational expenditure from 1966 to 1968 was 48.02 per cent compared with an 18.82 per cent increase in total municipal expenditures.

Table VIII provides a more detailed comparison of expenditures. Selected municipal expenditures and net operating school expenditures were used for comparison. These expenditures are comparable because they are expenditures for personal services. The selected municipal expenditures rose from \$33,993,000 in 1966 to \$42,476,000 in 1968 which was an increase of 24.95 per cent, while the net operating educational expenditures increased from \$71,751,000 in 1966 to \$109,336,000 in 1968, an increase of 52.38 per cent. With the additional data available for educational expenditure, the table shows an increase of 132.40 per cent in net operating school expenditures between 1961 and 1968. In 1967 and 1968 there were large increases in school expenditures because of the provincial Foundation Program.

II. FINANCIAL EFFORT FOR EDUCATION

The net operating educational expenditures for instruction, instructional supplies, maintenance and administration are analyzed on the following pages.

Table IX presents a record of net operating educational

TABLE VIII

SELECTED* MUNICIPAL OPERATING EXPENDITURES, 1966 - 1968,
AND NET OPERATING SCHOOL EXPENDITURES, 1961 - 1968

Year	Selected** Municipal Expenditures \$,000	Percentage Increase	Net Operating School Expenditures \$,000	Percentage Increase
1961			47,046	
1962			50,432	7.20
1963			54,130	7.33
1964			58,159	7.33
1965			63,427	9.06
1966	33,993		71,751	13.12
1967	38,599	13.55	91,401	27.39
1968	42,476	10.04	109,336	19.62
1961-1968		-		132.40
1966-1968		24.95		52.38

* Selected Municipal Operating Expenditures are expenditures for protection of persons and property, health, social welfare, recreation and community services, and administration.

** Prior to 1966 consolidated figures were not published.

Sources: Statistical Information Respecting Municipalities of the Province of Manitoba and the Metropolitan Corporation of Greater Winnipeg; 1966, 1967, 1968.

Annual Report, Department of Youth and Education, Province of Manitoba, for the year ending June 30, 1969.

TABLE IX

TOTAL NET OPERATING EXPENDITURES, NET OPERATING EXPENDITURES
PER PUPIL, INCREASE (DECREASE) THROUGH YEARS 1961 - 1968

Year	Total \$,000	Increase (Decrease)	Expenditure Per Pupil	Increase (Decrease)
1961	47,046		244	
1962	50,432	7.20%	253	3.76%
1963	54,130	7.33	263	3.84
1964	58,159	7.33	274	4.08
1965	63,427	9.06	290	5.81
1966	71,751	13.12	322	10.93
1967	91,401	27.39	407	26.58
1968	109,336	19.62	472	15.95
1961-1968		132.40		93.35

Source: Annual Report, Department of Youth and Education,
Province of Manitoba, for the year ending June 30,
1969.

expenditures for the years 1961 to 1968. The first two columns in the table give information on total net operating expenditures and per cent changes for those years. The expenditures for the period rose from \$47,046,000 to \$109,336,000--an increase of 132.40 per cent and an average yearly increase of 13.01 per cent. The last two columns in the table present data on per pupil expenditures and per cent changes. This information illustrates that from 1961 to 1965 per pupil expenditures were increasing at approximately 4 per cent. In 1961 the expenditure was \$244 and in 1965 it was \$290 per pupil. In the years 1966 to 1968 there were much larger increases. The per cent increase in 1967 was 26.58 when per pupil expenditures reached \$407. This was followed in 1968 by a 15.95 per cent increase to \$472 per pupil. For the total period 1961 to 1968 the per pupil expenditure increased from \$244 to \$472--an increase of 93.36 per cent and an average annual increase of 10.12 per cent.

Figure 2 illustrates graphically information in the first two columns of Table IX. The increases in the latter part of the period are very noticeable.

Figure 3 illustrates the information from the last two columns of Table IX. Again the increases in the latter part of the period are dramatically illustrated.

Net operating school expenditures are paid for in part by provincial grant and in part by the school district through taxes on real property. Table X illustrates this fact along with the

Figure 2: Net Operating Expenditure
(millions of dollars)

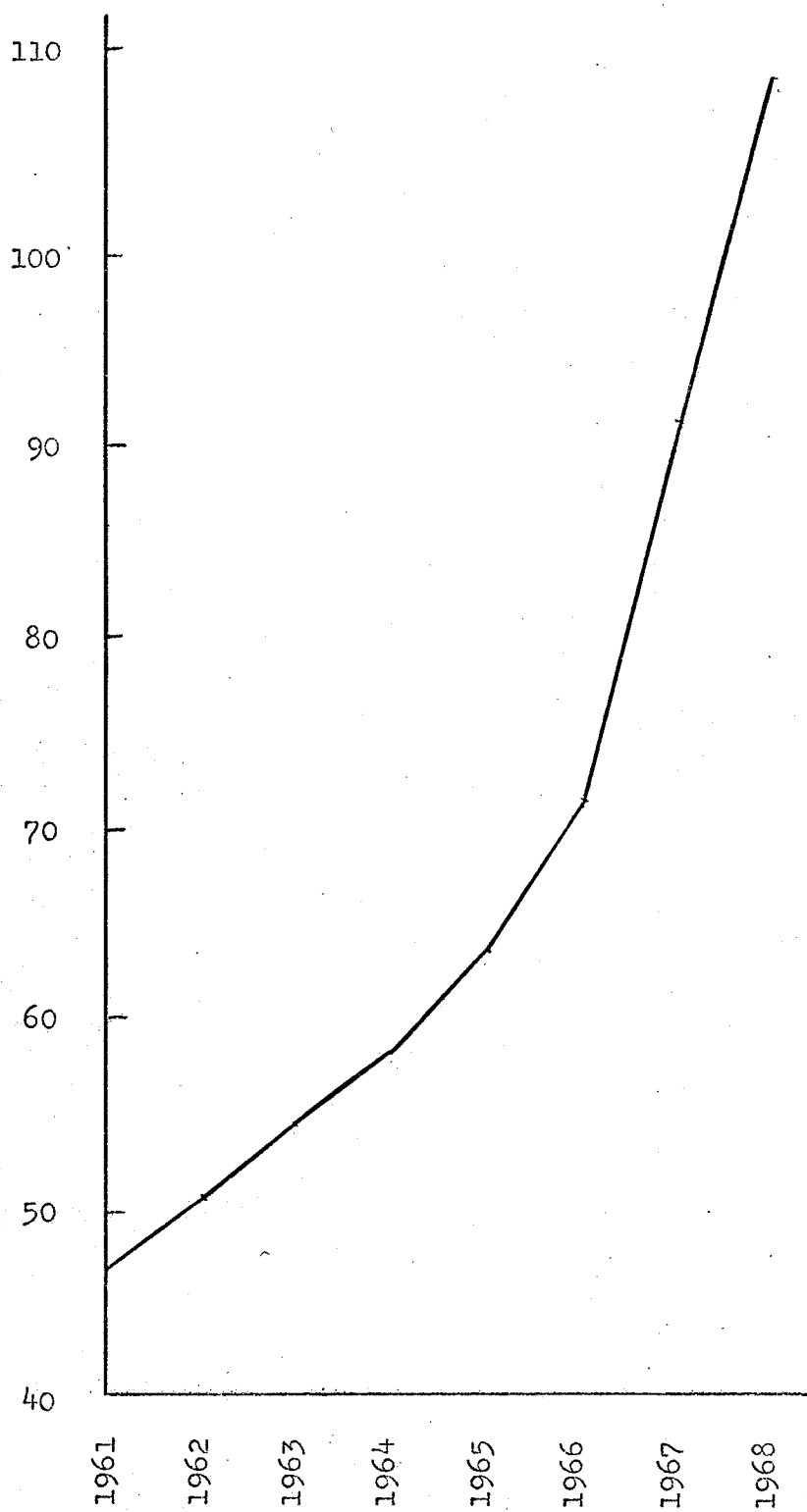


Figure 3: Net Operating Expenditure per Student
(dollars)

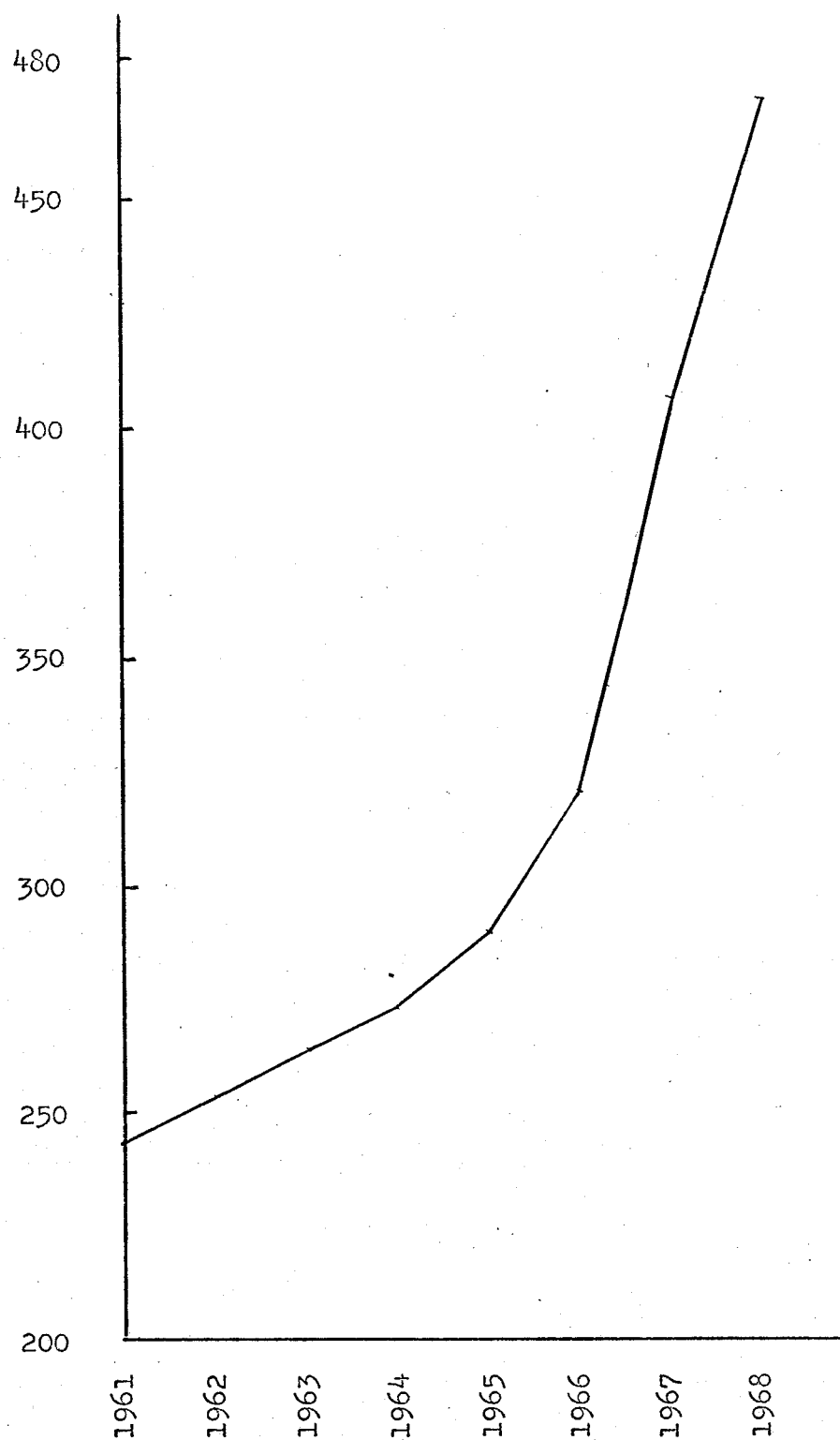


TABLE X

NET OPERATING REVENUE, AMOUNT FROM MUNICIPAL TAXES,
AMOUNT FROM PROVINCIAL GRANTS

Year	Net Operating Revenue \$,000 (a)	Amount from Taxes on Real Property (Municipal) \$,000 (b)	Per Cent (b) is of (a)	Amount from Provincial Grants \$,000 (c)	Per Cent (c) is of (a)
1961	48,289	30,369	62.89%	17,920	37.11
1962	51,643	32,438	62.81	19,205	37.19
1963	55,251	35,106	63.54	20,145	36.46
1964	58,580	37,589	64.17	20,991	35.83
1965	62,999	41,666	66.14	21,333	33.86
1966	69,950	46,359	66.27	23,591	33.73
1967	103,184	48,543	47.05	54,641	52.95
1968	124,530	60,582	48.64	63,948	51.35

Source: Annual Report, Department of Youth and Education,
Province of Manitoba for the year ending June 30,
1969.

percentages that each contribution is of the total expenditure.

The municipal share of net operating revenue has risen steadily from \$30,369,000 in 1961 to \$60,582,000 in 1968. From 1961 to 1966, the municipal share was between 63 and 66 per cent of the total revenue. In 1967 with the financial effects of the Foundation Program being felt the municipal share, while increasing in amount, decreased to 47.05 per cent of the total. Again in 1968 there was a further increase in the amount and an increase in the share to 48.64 per cent of the total.

Table XI is a breakdown of the municipal share of net operating revenue to show the amount raised from the Foundation Levy and the amount raised from Special Levy. The Foundation Levy is uniform throughout the province, one rate for business and industry and another rate for residential and farm. A Special Levy is assessed by individual school divisions to cover expenditures beyond what is covered by the provincial grants.

In 1967 total Special Levy for all unitary and non-unitary divisions was \$21,644,000. This was 20.97 per cent of net operating revenue. In 1968 total Special Levy for all divisions was \$25,177,000 or 20.22 per cent of net operating revenue.

In 1967 there were 19 non-unitary divisions. In 1968 this number had been reduced to eight non-unitary divisions.

Table XII shows the source of all revenue of unitary divisions for the years 1967 and 1968. In 1968 the number of unitary divisions increased by 11 from 29 to 40.

TABLE XI

NET OPERATING REVENUE, FOUNDATION LEVY,
SPECIAL LEVY 1967, 1968

Year	Net Operating Revenue \$,000 (a)	Foundation Levy \$,000 (b)	Special Levy \$,000 (c)	Per Cent (b) is of (a)	Per Cent (c) is of (a)
1967	103,184	26,899	21,644	26.07	20.97
1968	124,530	35,405	25,177	28.43	20.22

Source: Annual Report, Department of Youth and Education,
Province of Manitoba for the year ending June 30, 1969.

TABLE XII
UNITARY SCHOOL DIVISIONS
STATEMENT OF REVENUE 1967, 1968

	1967 \$,000	1968 \$,000
Manitoba Government ¹	74,581	97,457
Government of Canada	487	927
Municipal Governments ²	12,852	21,085
Other School Boards	491	685
Individuals	536	652
Other Sources	1,058	259
TOTAL REVENUE	90,004	121,065

¹This includes Foundation Levy.

²This is Special Levy only.

Source: Annual Report, Department of Youth and Education,
Province of Manitoba, for the year ending June 30,
1969.

In 1967 municipal governments in the province raised a total of \$12,852,000 by Special Levy for schools. This was 14.28 per cent of total revenue. In 1968 municipal governments raised \$21,085,000 by Special Levy for schools. This was 17.42 per cent of total revenue.

Because the number of unitary divisions is different in these two years, the figures should not be compared. However, they can be used as a norm to which the Special Levies of individual unitary divisions could be compared to arrive at an indication of effort.

The total and per pupil expenditures for instruction, instructional supplies, maintenance and administration are presented in Table XIII. Because of a change in accounting procedures in 1967 it is not possible to separate instruction and instructional supplies for that year and for 1968. However, between 1961 and 1966 it will be noted that total expenditure for instruction rose from \$35,372,000 to \$51,961,000 or from \$184 per pupil to \$233 per pupil. During the same period total expenditure for instructional supplies rose from \$2,493,000 to \$5,602,000 or from \$13 to \$25 per pupil. Taking total expenditures for instruction and instructional supplies together for the period 1961 to 1968, it will be noted that they rose from \$37,865,000 to \$90,443,000, or from \$197 to \$390 per pupil. The expenditure for maintenance rose from \$7,133,000 or \$37 per pupil to \$14,095,000 or \$61 per pupil. The expenditure for administration

TABLE XIII

TOTAL AND PER PUPIL EXPENDITURES FOR INSTRUCTION, INSTRUCTIONAL
SUPPLIES, MAINTENANCE AND ADMINISTRATION,
1961 - 1968

Year	Instruction		Instructional Supplies		Maintenance		Administration	
	Total \$,000	Per Pupil	Total \$,000	Per Pupil	Total \$,000	Per Pupil	Total \$,000	Per Pupil
1961	35,372	184	2,493	13	7,133	37	2,048	11
1962	37,648	189	2,708	14	7,727	39	2,349	12
1963	40,408	196	3,046	15	8,000	39	2,676	13
1964	43,036	203	3,503	16	8,667	41	2,953	14
1965	46,380	212	4,636	21	9,156	42	3,255	15
1966	51,961	233	5,602	25	10,251	46	3,937	18
1967	74,407	331			12,938	58	4,057	18
1968	90,443	390			14,095	61	4,798	21

Source: Annual Report, Department of Youth and Education,
Province of Manitoba for the year ending June 30,
1969.

rose from \$2,048,000 or \$11 per pupil in 1961 to \$4,798,000 or \$21 per pupil in 1968. This information illustrates that per pupil costs for instruction, instructional supplies, and administration have doubled in 1968 from what they were in 1961. Per pupil expenditures on maintenance have increased by 65 per cent.

The percentages that each of the expenditure categories is of net operating expenditures are illustrated in Table XIV. It can be seen that between 1961 and 1966 there was a steady decrease in expenditures for instruction from 75.19 per cent to 72.42 per cent corresponding with a steady increase in expenditures for instructional supplies from 5.30 per cent to 7.81 per cent. However, taken together these categories represent a relatively constant 80 per cent of the net operating expenditures. In 1967 and 1968 they rose to 81.41 per cent and 82.72 per cent. The expenditure category of maintenance dropped from 15.16 per cent in 1961 to 12.89 per cent in 1968. The expenditure category of administration rose steadily from 4.35 per cent in 1961 to 5.48 per cent in 1966 then dropped so that by 1968 it was almost back to its 1961 level.

Table XV presents the first index of this study. This is a comparison of net operating school expenditures and municipal expenditures. The index increased from 54.27 per cent in 1966 to 66.30 per cent in 1967 and to 69.60 per cent in 1968. This change was not caused by greater effort from the local school districts and divisions but rather by a greater financial

TABLE XIV

EDUCATIONAL EXPENDITURE CATEGORIES OF INSTRUCTION, INSTRUCTIONAL SUPPLIES, MAINTENANCE AND ADMINISTRATION AS A PERCENTAGE OF TOTAL NET OPERATING EXPENDITURES, 1961 - 1968*

Year	Instruction	Instructional Supplies	Maintenance	Administration
1961	75.19%	5.30%	15.16%	4.35%
1962	74.65	5.37	15.32	4.66
1963	74.65	5.63	14.78	4.94
1964	74.00	6.02	14.90	5.08
1965	73.12	7.31	14.44	5.13
1966	72.42	7.81	14.29	5.48
1967	81.41		14.15	4.44
1968	82.72		12.89	4.39

*See Table XIII for dollar figures.

TABLE XV

NET OPERATING SCHOOL EXPENDITURES CALCULATED AS
PERCENTAGES OF MUNICIPAL EXPENDITURES

Year	Net Operating School Expenditures (a)	Municipal Expenditures \$,000 (b)	<u>Index 1</u> Per Cent that (a) is of (b)
1966	71,751	132,217	54.27%
1967	91,401	137,875	66.30
1968	109,336	157,105	69.60

Source: Table VIII and Table VII.

support from the province.

Table XVI, net operating educational expenditures per pupil are compared with equalized assessment per pupil. This is index 2. In 1961 the index was 3.77 per cent. This rose gradually to 6.00 per cent in 1968.

Table XVII shows a relationship between net operating educational expenditure and total personal income. This is index 3. This index was 3.37 per cent in 1961, fluctuated for the next four years from a low of 3.20 per cent in 1962 to a high of 3.41 per cent in 1965, then continued to rise to 3.59 per cent in 1966 and 4.10 per cent in 1967.

Table XVIII compares expenditure on a per pupil basis with income per capita. This relationship is the Composite Index 4. This index demonstrates conclusions similar to index 3. Starting with an index of 16.13 per cent in 1961, fluctuations go to a low of 15.02 per cent in 1962 to a high of 17.57 per cent in 1967.

Table XIX gives a detailed study of index 4. It shows specifically what per cent each expenditure category is of personal income. The percentages that are shown in this table are the sub-indexes whose sum is equal to Composite Index 4. The composite index is shown under the heading "Total" in the final column of the table. This table demonstrates that the expenditure category of instruction constitutes the greatest part of the composite index. In 1961, when the composite index was 16.13 per

TABLE XVI

NET OPERATING EDUCATIONAL EXPENDITURES PER PUPIL
CALCULATED AS PERCENTAGES OF EQUALIZED
ASSESSMENT PER PUPIL

Year	Educational Expenditure Per Pupil (a)	Equalized Assessment Per Pupil (b)	Index 2 Per Cent that (a) is of (b)
1961	244	6,472	3.77%
1962	253	6,458	3.92
1963	263	6,489	4.05
1964	274	6,401	4.28
1965	290	6,620	4.38
1966	322	6,872	4.68
1967	407	7,720	5.27
1968	472	7,871	6.00

Sources: Table IX, Table V.

TABLE XVII
NET OPERATING EDUCATIONAL EXPENDITURE AND
TOTAL PERSONAL INCOME, 1961 - 1967

Year	Net Operating Educational Expenditure \$,000 (a)	Personal Income ,000,000 (b)	<u>Index 3</u> Per Cent. that (a) is of (b)
1961	47,046	1,395	3.37%
1962	50,432	1,578	3.20
1963	54,130	1,599	3.39
1964	58,159	1,725	3.37
1965	63,427	1,858	3.41
1966	71,751	1,997	3.59
1967	91,401	2,231	4.10

Sources: Annual Report, Department of Youth and Education, Province of Manitoba, for the year ending June 30, 1969.

Canada Year Book, 1969 Edition.

TABLE XVIII

NET OPERATING EDUCATIONAL EXPENDITURE PER PUPIL AS A
PER CENT OF PERSONAL INCOME PER CAPITA
1961 - 1967

Year	Net Operating Educational Expenditure Per Pupil (a)	Personal Income Per Capita (b)	<u>Index 4</u> Per Cent that (a) is of (b)
1961	244	1,513	16.13%
1962	253	1,686	15.02
1963	263	1,685	15.61
1964	274	1,799	15.22
1965	290	1,925	15.06
1966	322	2,074	15.51
1967	407	2,317	17.57

Sources: Table IX, Table VI.

TABLE XIX

EXPENDITURES OF INSTRUCTION, INSTRUCTIONAL SUPPLIES, MAINTENANCE
AND ADMINISTRATION, EACH AS A PERCENTAGE OF PERSONAL INCOME
PER CAPITA 1961 - 1967

Year	Instruc- tion	Instruc- tional Supplies	Mainten- ance	Adminis- tration	Total
1961	12.12%	.86%	2.45%	.70%	16.13%
1962	11.21	.81	2.30	.70	15.02
1963	11.65	.88	2.31	.77	15.61
1964	11.26	.92	2.27	.77	15.22
1965	11.02	1.10	2.17	.77	15.06
1966	11.23	1.21	2.22	.85	15.51
1967	14.30		2.49	.78	17.57

Detailed study of Index 4, Table XVIII.

cent, the sub-index for instruction was 12.12 per cent. The sub-indexes for instructional supplies, maintenance and administration were 0.86 per cent, 2.45 per cent and 0.70 per cent respectively.

Table XX shows a comparison between total school expenditure and total income. This comparison shows the amount of increase in expenditure associated with a one per cent increase in income and is called "income elasticity of demand for education." In 1961 with a 6.84 per cent increase in expenditure and an 11.43 per cent increase in income per capita the elasticity of demand was 0.60 per cent. This means that increases in educational expenditures were less than increases in income on a percentage basis. In 1962 a 7.66 per cent increase in education expenditure was paired with no change in income per capita. From 1964 to 1967 the elasticity of demand rose from 0.99 per cent to 2.13 per cent. For the period 1961 to 1967, the elasticity was 1.69 per cent. This table demonstrates that in the years since 1964 educational increases exceeded incomes increases on a percentage basis.

The tables in this chapter attempted to give statistical information about the Province of Manitoba and detailed statistical analyses of educational expenditures. Educational expenditures were compared to municipal expenditures, equalized assessment and personal income. The chapter concluded with an analysis of the educational categories of instruction, instructional

TABLE XX

PER CENT INCREASE IN TOTAL SCHOOL EXPENDITURE COMPARED TO
PER CENT INCREASE IN PERSONAL INCOME, ELASTICITY OF
DEMAND 1961 - 1967*

Year	Per Cent Increase in Expenditure	Per Cent Increase in Income	Elasticity of Demand
1961			
1962	6.84%	11.43%	.60
1963	7.67	-	-
1964	6.73	6.77	.99
1965	9.08	7.00	1.30
1966	13.47	7.74	1.74
1967	24.98	11.72	2.13
1961 to 1967	89.92	53.14	1.69

* Compare Table VII for total expenditure data and
Table VI for income data.

supplies, maintenance and administration. These categories were analyzed separately and compared to personal income.

CHAPTER VI

SUMMARY AND CONCLUSIONS

I. THE PROBLEM AND THE PROCEDURE

The purpose of this study was to analyze the educational effort of the Province of Manitoba for the years 1961-1968.

Relevant data including population, school enrolment, equalized assessment, municipal expenditures, personal income and total educational expenditures were first presented. This was followed by an analysis of net operating educational expenditures. Four indexes of effort were investigated, each employing net operating educational expenditures. These indexes of effort were:

1. educational expenditure as a percentage of municipal expenditure;
2. educational expenditure as a percentage of equalized assessment per pupil;
3. educational expenditure as a percentage of personal income;
4. educational expenditure per pupil as a percentage of income per capita.

The fourth index was analyzed in detail as it was considered as a composite index. This composite index included sub-indexes relating to specific educational expenditure categories.

These were:

1. instructional services (salaries),
2. instructional supplies,
3. maintenance,
4. administration.

Total expenditures per pupil in these categories were compared to personal income per capita.

The comparison of personal income and educational expenditure concluded the statistical analysis of this study. This ratio illustrated the per cent increase in gross educational expenditure for each 1.00 per cent increase in total personal income and is called "income elasticity of demand for education."

II. SUMMARY OF FINDINGS

The population of the Province of Manitoba and its school enrolment increased gradually during the period 1961 to 1968. The population increased from 921,686 to 971,000 (estimated) in 1968 and school enrolment increased from 192,737 to 231,640. Public school enrolment increased from 21 per cent of the population in 1961 to 24 per cent of the population in 1968.

Equalized assessment in total and per capita increased during the 1961 to 1968 period. Total equalized assessment increased from \$1,247,310,000 to \$1,823,265,000 while assessment per pupil increased from \$6,472 to \$7,871.

Total personal income and income per capita increased

during the period 1961 to 1967. Total personal income increased from \$1,395,000,000 to \$2,231,000,000 while income per capita increased from \$1,513 to \$2,317. Income figures for 1968 were not available.

Educational expenditures rose from \$60,569,000 in 1961 to \$136,238,000 in 1968, an increase of approximately 125 per cent.

Municipal expenditures for the three years 1966 to 1968 rose from \$132,217,000 to \$157,105,000--an increase of 18.82 per cent. During the same period educational expenditures rose 48.02 per cent.

School net operating expenditures were compared with selected municipal expenditures, which were mainly for personal services. The selected municipal expenditures increased from \$33,993,000 in 1966 to \$42,476,000 in 1968, which was an increase of 24.95 per cent. During the same period school net operating expenditures increased 52.38 per cent from \$71,751,000 to \$109,336,000.

The net operating educational expenditures increased from \$47,046,000 in 1961 to \$109,336,000 in 1968--an increase of 132.40 per cent. Net operating expenditure per pupil rose from \$244 to \$472 during the period, which was an increase of 93.35 per cent.

In comparing net operating revenue from municipal sources and from provincial grants it was found that there was a steady increase in amounts from both sources, but with the introduction of the Provincial Foundation Program in 1967, the municipal share

dropped significantly. Municipal contributions rose from \$30,369,000 in 1961 to \$60,582,000 in 1968. Provincial grants rose from \$17,920,000 in 1961 to \$63,948,000 in 1968. Municipal share reached a high of 66.27 per cent in 1966 and a low of 47.05 per cent in 1967.

The expenditure category of instruction (salaries) constituted the largest single item of per pupil expenditure. In 1961 the expenditure was \$184 per pupil, or 75.19 per cent of the net operating expenditure. This percentage dropped slowly to 72.42 per cent in 1966. There was a corresponding increase in the proportion spent on instructional supplies. Taken together instruction and instructional supplies were constant from 1961 to 1966 at approximately 80 per cent. In the following two years they rose to 82.72 per cent.

The first index of effort, the comparison of school net operating expenditures and municipal expenditures shows that from 1966 to 1968 the net operating expenditures rose from 54.27 per cent to 69.60 per cent of municipal expenditures.

The second index, a comparison of net operating school expenditures per pupil and equalized assessment per pupil shows that this ratio rose gradually from 3.77 in 1961 to 4.38 in 1965 then more rapidly to 6.00 in 1968.

Index three, a comparison of net operating educational expenditure and total personal income for the years 1961 to 1967 shows that net operating expenditures were 3.37 per cent of

personal income in 1961, fluctuated up and down until 1965 then rose rapidly to 3.59 per cent in 1966 and 4.10 per cent in 1967.

Index four, which compared net operating educational expenditures per pupil with personal income per capita demonstrates the same conclusion as index three. In 1961, the ratio was 16.13 per cent. It fluctuated up and down and reached 15.51 per cent in 1966 and 17.57 per cent in 1967. The initial year of the Provincial Foundation Program was 1967 and it was in this year that effort as demonstrated by index four surpassed the effort of 1961.

The final analysis in this study, the elasticity of demand for education, establishes that for the period from 1961 to 1967 each 1.00 per cent increase in personal income was accompanied by a 1.69 per cent increase in total educational expenditure.

Table XXI shows a comparison of the indexes used in this study. It will be noted that there is no consistent pattern in comparing one with another. Index two shows a steady increase in effort by the province's realty taxpayers between 1961 and 1968, whereas indexes three and four show variations in effort up and down for several years then steady increases during the last few years of the study.

The greatest value of these indexes lies in their use as provincial norms to which district or division norms can be compared.

TABLE XXI
COMPARISON OF INDEXES

Year	Index 1	Index 2	Index 3	Index 4	Elasticity of Demand
1961		3.77	3.37	16.13	
1962		3.92	3.20	15.02	0.60
1963		4.05	3.39	15.61	0.00
1964		4.28	3.37	15.22	0.99
1965		4.38	3.41	15.06	1.30
1966	54.27	4.68	3.59	15.51	1.74
1967	66.30	5.27	4.10	17.57	2.13
1968	69.60	6.00	-	-	-

Index 1 = Net operating school expenditures calculated as percentages of municipal expenditures.

Index 2 = Net operating educational expenditures per pupil calculated as percentages of equalized assessment per pupil.

Index 3 = Net operating educational expenditures calculated as percentages of total personal income.

Index 4 = Net operating educational expenditures per pupil as a per cent of personal income per capita.

Elasticity of Demand = Per cent increase in total school expenditure compared to per cent increase in personal income.

The most valuable index of effort employed in this study is the Elasticity of Demand. Here increases in expenditure are compared with increases in income. This index demonstrated that there has been an increased effort by Manitobans, particularly since 1964, as demonstrated by their willingness to devote larger parts of their personal income to public elementary and secondary education.

III. INFERENCES

Since the Foundation Program was implemented in Manitoba, there has been a reduction in the percentage of education costs to property owners. This does not mean, however, that taxes on real property for education purposes have been reduced or even held at a given level, but that greater portions of increased education expenditures have been paid out of provincial general revenues. It does mean that the increased education effort of the years 1967 and 1968 have been made possible with only moderate increases in special levy, and increases in other areas of provincial taxation. The study demonstrates that indirect support to education has increased in the form of higher provincial taxes.

The Foundation Program is based on fixed numbers of dollars in the various educational categories, analyzed in this study. Inflation lowers the value of the Foundation Program each year. Periodical increases in provincial contributions must be

made to assure that school districts and divisions continue to receive the same percentage support.

IV. RECOMMENDATIONS

1. The Department of Youth and Education should revise its annual reports so that expenditures for elementary and secondary students could be analyzed separately. This would give more accurate statistics on expenditures per pupil.
2. The Faculty of Education of the University of Manitoba should encourage province wide and division studies of education finance in general and education expenditures in particular.
3. The studies should be reported to school boards as a basis for action.

V. IMPLICATIONS FOR FURTHER RESEARCH

The findings of this study have several implications for further research. The provincial norms established here should be computed annually so that provincial trends can be analyzed.

Studies should be conducted of education effort in individual school divisions, using this study as a model, and then comparing divisional statistics with these provincial norms.

The provincial norms established in this study are not

necessarily ideals towards which individual divisions should strive but significant differences from these norms could be evaluated in terms of educational outputs.

This study has concerned itself with an educational input --money. Studies at the provincial level and at the divisional level should be undertaken to evaluate educational outputs--the students. What effect would an increase in effort have on student retention, student performance, teacher mobility, and quality teaching? These and similar questions, when studied by graduate students and administrators, would provide important information for Manitoba schools.

BIBLIOGRAPHY

- Alkin, M. C. "Measurement of State Effort to Support Public Education," Trends in Financing Public Education. Washington, D.C.: Committee on Educational Finance, National Education Association, 1965.
- Andrews, J. H. M., and S. M. Hosein. "What is Your Province's Educational Effort," School Administrator III (September, 1966), 43-48.
- Bellan, Ruben C. Principles of Economics and the Canadian Economy. Second edition. Toronto: McGraw-Hill Book Company, 1963.
- Burke, Arvid J. "Local, State and Federal Financing of Locally Operated Elementary and Secondary Schools," The Theory and Practice of School Finance, editors W. E. Gaurke and J. R. Childress. Chicago: Rand McNally and Company, 1967.
- Canadian Teachers' Federation. "Educational Load and Our Ability to Support Education," Educational Finance in Canada 1946-1956. Ottawa: Canadian Teachers' Federation, 1954.
- Canadian Teachers' Federation. Financing Education in Canada. Ottawa: Canadian Teachers' Federation, 1967.
- Carter, Thomas Dan. "The Development of a Procedure for Computing a Cost of Education Index for the Public Schools of the State of Texas." Unpublished Doctoral thesis, The University of Texas, Austin, 1966. (Microfilm)
- Cheal, John E. Investment in Canadian Youth. Toronto: The Macmillan Company of Canada, 1963.
- Economic Council of Canada. The Canadian Economy from the 1960's to the 1970's. Fourth Annual Review. Ottawa: The Queen's Printer, 1967.
- Francis, J. P. "Financing Education: The National Problem," School Progress XXXIV (November, 1965), 38-39.
- Hemphill, H. David. "Trends in Educational Finance and the Public Sector 1946-60," Canadian Education and Research Digest VII (December, 1967), 334-347.

- Holzhauser, Gerald James. "Cost of Education Index for Lutheran Community High Schools in the United States." Unpublished Doctoral dissertation, Indiana University, Bloomington, 1966. (Microfilm)
- Inman, K. M. Economics in a Canadian Setting. Toronto: The Copp-Clark Publishing Company, 1959.
- Jarvis, D. J., H. W. Gentry, and L. D. Stephens. Public School Business Administration and Finance. New York: Parker Publishing Company, 1967.
- Johns, R. L. "Indirect Measures of Local Ability to Support Schools," Trends in Financing Public Education. Washington, D.C.: Committee on Educational Finance, National Education Association, 1965.
- Johns, R. L., and E. L. Morphet. Financing the Public Schools. Englewood Cliffs: Prentice-Hall, 1960.
- "Living and Learning." Report of the Provincial Committee on Aims and Objectives in the Schools of Ontario. Toronto: Ontario Department of Education, 1968.
- Maltby, P. L. "Measuring Your Education Effort," School Progress XXXIV (September, 1965), 32-34.
- Miner, Jerry. Social and Economic Factors in Spending for Public Education. Syracuse: Syracuse University Press, 1963.
- Moffat, H. P. Educational Finance in Canada. Toronto: W. J. Gage Limited, 1951.
- Moffat, H. P. "Some Principles on Educational Finance," Canadian Education and Research Digest IV (September, 1964), 193-207.
- Morphet, E. L., R. L. Johns, and T. L. Reller. Educational Organization and Administration: Concepts, Practices and Issues. Second edition. Englewood Cliffs: Prentice-Hall, 1967.
- Mort, P. R., and W. C. Reusser. Public School Finance. New York: McGraw-Hill Book Company, 1951.
- Rideout, E. Brock. "The Financial Support of Education," Canadian Education and Research Digest VIII (June, 1968), 85-103.

School Management. "The Cost of Education Index," School Management II (January, 1967), 109-208.

Schultz, Theodore. The Economic Value of Education. New York: Columbia University Press, 1963.

Sorenson, K. M. "Measuring Local Ability in Colorado," Trends in Financing Public Education. Washington, D.C.: Committee on Educational Finance, National Education Association, 1965.

Wasserman, William. Education Price and Quantity Indexes. Syracuse: Syracuse University Press, 1963.