

AN ANALYSIS OF FINANCIAL OPERATIONS AND  
QUALITY SURROGATES OF SELECTED MANITOBA  
SCHOOL DIVISIONS

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## ABSTRACT

The purpose of this study was to analyze and compare the operations of a multi-district school division with three unitary school divisions in Manitoba. The problem was sub-divided into two parts; the analysis of financial data, and the analysis of quality surrogates.

The data analyzed pertained to the time from which the unitary divisions were established as unitary divisions to 1970 inclusively. The financial data analyzed included balanced assessments, financial ability, expenditures, grants, real property education taxes, and educational effort. Surrogates of quality considered in this study included retention rates, student-teacher ratios, super-numerary staff, qualifications of teachers, teaching experience, salary levels, analysis of operational expenditures, audio visual materials, and several supplementary factors.

From the analysis of the data as presented in this study several conclusions were drawn:

1. The multi-district division ranked second in fiscal ability. However, this level of ability was well above the median, being similar to that of the first place division.
2. The multi-district division ranked first in educational effort in 1967 and 1968, and ranked second in effort in 1969 and 1970.

3. The greatest proportion of current educational expenditures was paid for by local real property taxes in the non-unitary division.
4. Provincial government grants for current educational expenditures did not appear to increase commensurately with the rate of increase in current educational expenditures.
5. The various quality surrogates analyzed in this study suggested that the multi-district school division did not provide education that was inferior to that provided by the unitary divisions.
6. The maintenance of such quality education in the non-unitary division was made possible chiefly through a high level of educational effort, which in turn was largely made possible by the relatively high level of fiscal ability found in the non-unitary division.

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## CHAPTER I

### INTRODUCTION TO THE STUDY

As of January 1, 1967 provincial legislation in Manitoba has permitted school districts to re-organize on a unitary basis, upon approval by the rate-payers. The main objective of this legislation was to provide improved educational services and opportunities, particularly in the rural school districts of Manitoba.

To encourage the process of consolidation a new financial support system was established.<sup>1</sup> The foundation program, as it was called, provided for more generous grants to those multi-district divisions re-organizing under the unitary plan. In the unitary divisions foundation grants pay for one hundred per cent of the cost of a standard system of primary and secondary education.<sup>2</sup> School divisions may, however, elect to provide additional educational services at a local expense. In multi-district divisions grants provide for only approximately sixty per cent of transportation costs, fifty per cent of the cost of supplies, from forty to sixty-five per cent of capital expenditures, and a significantly smaller proportion of administrative and maintenance allowances.<sup>3</sup>

Despite the grant incentives of the foundation program, the residents in six multi-district school divisions have continued to successfully oppose re-organization up to December 31, 1970. Although the decision to re-organize as a unitary

division was left to the electorate in most school divisions of Manitoba, a plebiscite to implement the unitary plan was not held in a number of Interlake school divisions, as these areas were receiving A.R.D.A. and F.R.E.D. grants\* from the Federal Government.

## I. STATEMENT OF THE PROBLEM

It was the purpose of this study to analyze and compare the operations of a non-unitary school division with the operations of three unitary school divisions in Manitoba from the time these three divisions were organized as unitary divisions to December 31, 1970. In order to maintain anonymity the three unitary divisions were designated as Divisions A, B, and C. The multi-district division was identified as Division D.

In general this study focussed on aspects of finance, and aspects that would appear to indicate quality in education. The problem was approached by attempting to answer the questions of the following three sub-problems:

1. How did the non-unitary school division compare to the unitary school divisions with regard to financial resources and expenditures? This part of the study analyzed assessments, burden, ability, expenditures, local educational real property revenues (general, foundation, and special levies), grants, and educational effort indices.

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\* Agricultural Rehabilitation Development Act, and Fund for Rural Economic Development.

2. How did the non-unitary school division compare to the unitary school divisions with respect to the tangible aspects of quality in education? The surrogates of quality used in this study included student retention, student-teacher ratios, super-numerary staff, teacher qualifications, teaching experience, salary schedules, breakdown of operational expenditures, audio visual supplies, and several supplementary indicators.
3. What effect, if any, did the lack of the foundation support system in the non-unitary division appear to have upon the quality of education as indicated by the surrogates of quality?

## II. SIGNIFICANCE OF THE STUDY

Recent attempts at re-organizing school districts in Manitoba date back to the fifties and sixties. Other consolidations took place in earlier years. However, the only large scale and significant re-organizations occurred in the last two decades. In 1959, at the recommendation of the MacFarlane Commission, secondary school divisions were established. The other major re-organization was the formation of unitary school divisions provided for in legislation of 1967. On both occasions incentive grants were made available by the Manitoba Provincial Government to enable school districts and school divisions to provide more adequately for education services under the "division" and the "unitary" plans.

As a comparison of operations between unitary and non-unitary divisions has not previously been undertaken it appeared worthwhile to carry out such an analysis. This study focussed on one of the remaining multi-district divisions and compared its operations with three unitary school divisions to determine what effect the different support system may have had upon the non-unitary division.

The Manitoba Department of Education, in taking further steps to implement the unitary plan, may be able to utilize the information of this study. Weak opposition may possibly be anticipated toward re-organization in multi-district divisions if the residents are not paying a relatively higher local levy and are accepting a lower quality of education. On the other hand, if the residents are willing to spend money out of their own pockets in the form of comparatively high local levies in order to maintain quality education in their own districts, this would appear to indicate a rather strong opposition to the unitary plan.

A study such as this may contribute worthwhile information to the development of provincial norms in educational finance. Such norms could be used in the evaluation of educational programs or cost-quality studies on a province-wide basis.

The findings of this study may also act as a guide to local administrators in analyzing and evaluating the financial operations and the administrative policies of their divisions. The development of new programs and the revision, expansion, deletion, or continued operation of current programs could be justified. In addition, administrators could possibly establish relationships between

quality and effort on a local basis, and compare these to provincial norms or to other school divisions. The information in this study may further prove useful to division administrators for purposes of correlating student-retention, teacher turn-over, and pupil performance, with expenditures.

### III. DEFINITION OF TERMS

Key terms used in this study were defined with respect to their application in this study.

A non-unitary or multi-district school division is a division in which the secondary schools and elementary schools are being administered by different school boards. Such a division is therefore directed by several elementary school boards and one secondary school board. A unitary division is one in which all elementary and secondary schools are operated by one school board.

The term high school referred to a secondary school in which instruction was given from grades nine to twelve inclusively. An elementary school was a school in which instruction was provided from kindergarten or grade one to grade eight inclusively.

Wealth was defined as the economic resources (i.e. tax base) against which a school board could levy taxes. In this study wealth was measured by balanced assessments of real property. Balanced assessment was defined as the sum of equalized assessment of residential and agricultural property, plus the assessment of other properties including industrial and commercial holdings. Figures on balanced assessment are generally equivalent to total assessment.

Burden in this study referred to the educational task or work load borne by a division, and was measured by the enrolment, and the weighted pupil enrolment. Financial ability or fiscal capacity was defined as the economic resources supporting the burden. Financial ability was measured by the ratio of the balanced assessment of real property to the educational burden, i.e. ability =  $\frac{\text{balanced assessment}}{\text{burden}}$ .

Educational effort referred to the degree to which residents of a school division were financially supporting the local educational system. Educational effort was measured by the ratio of the per pupil educational real property revenue generated to ability, i.e. educational effort =  $\frac{\text{revenue/burden}}{\text{ability}}$ . It was noted that ability was the ratio of balanced assessment to burden, hence educational effort =  $\frac{\text{revenue}}{\text{balanced assessment}}$ .

The term super-numerary teachers referred to those members of the teaching staff in a division for whom no provincial education grants were received.

Student retention was defined as the "holding power" of schools over students who may legally obtain employment, i.e. those students who are sixteen years of age or over. Two indices of student retention were used, the ratio of high school students to elementary pupils expressed in percentages, and the ratio of grade twelve enrolments to high school enrolments expressed in percentages.

Quality in education referred to the relative superiority of the education offered in one division in comparison to that

offered in another, as reflected by such tangible indicators as teacher qualifications and experience, student-teacher ratios, specialized personnel, audio visual supplies, pupil retention, salary levels, super-numerary teachers, analysis of operational expenditures, and several other surrogates.

It was also necessary to distinguish between operational expenditures and current expenditures. Operational expenditures referred to expenditures incurred for administration, instructional services, maintenance, transportation, and miscellaneous items. Current expenditures were defined as operational expenditures plus expenditures on debt services, and capital expenditures not included in the capital expenditures budget.

#### IV. ASSUMPTIONS

For the purposes of this study it was assumed that real property valuation is a valid indicator of financial wealth. As an alternative, income could have been used. However A.J. Burke questions the validity of income as an indicator of wealth.<sup>4</sup> He suggests that the high mobility of the population can give rise to a false measure of wealth. He further questions income as a valid measure of wealth on the basis that it is difficult to trace the shifting and incidence of taxes in a complex economy. He also doubts the validity of un-audited income returns.

E. L. Morphet and R. L. Johns in discussing real property assessment as a measure of wealth suggest that income would be a better indicator of wealth if pertinent background information

such as the cost of living were available.<sup>5</sup> Unfortunately such information is not always available.

S. J. Mushkin does not openly state that one of income or real property valuation is preferable to the other as an indicator of wealth. He does suggest, however, that if the local government is limited to real property taxes as a source of revenue, property assessments would appear to be the most relevant indicator of wealth.<sup>6</sup>

In Manitoba local taxes collected for the specific purpose of education are derived from real property assessments. Consequently real property valuations were used as the indicator of wealth in this study. Presumably real property valuations (i.e. balanced assessment) are a valid indicator of wealth.

In measuring the degree to which the residents of a division are willing to financially support education it was assumed that educational effort as defined was a valid measure of effort. Other studies focussing locally, as well as nationally, have used similar measures of effort which have been found to be acceptable.

It was also assumed that student-teacher ratios, qualifications and experience of teachers, student retention, and the other surrogates of quality used in this study were valid in reflecting quality in education.

Finally it was assumed that the data obtained from the various sources as presented in this study were correct and valid, and reflected the actual situation at the time the data was recorded.

## V. DELIMITATIONS

The data analyzed in this study were restricted to the years from 1967 to 1970, where available, i.e. from the date the unitary status was assumed by the unitary divisions. This study was also restricted to an analysis and comparison of three unitary divisions with one non-unitary division.

Property assessments were the only indicators of wealth used in this study. No consideration was made of income level, sales tax receipts, or numbers of cars registered per person as indicators of wealth.

The tangible indicators of quality used in this study were restricted to student retention rates, student-teacher ratios, qualifications and experience of teachers, audio visual supplies, salary levels, super-numerary teachers, analysis of operational expenditures, and several other surrogates. It was recognized that the "intangible" category of quality characteristics such as independence of thought, creativity, career success, etc. form a very significant portion of the overall quality of education. The analysis of such intangible characteristics was not included in this study because the consideration of these subjective characteristics was beyond the scope of this study.

## VI. LIMITATIONS

Inherent limitations exist in any attempt to measure educational effort. In Manitoba grants are made to school divisions by the Provincial Government to cover a portion of the educational

expenditures. These grants from the provincial treasury are generated from a variety of taxes, including sales, alcohol, tobacco, motor vehicle fees, etc., as well as real property taxes. A true measure of effort would consider the proportion of those funds allocated to education from the provincial treasury which were generated from taxes other than real property. Such a consideration in measuring effort leads to an extremely involved process, and was beyond the scope of this study. Thus there was a limit to the validity of the index of effort based upon real property taxes.

Another limitation was due to the small sample size. It would be difficult to generalize any of the findings. The best conclusion that could be drawn from the analysis of the data was that the non-unitary division compared to the unitary divisions in a certain way relative to a particular aspect of this study.

There was also a limitation in that no provincial norms for educational effort exist to which the results of this study could be compared. Without provincial norms there are no means by which a minimum acceptable standard of effort could be determined. Thus it was difficult to decide whether or not a specific measure of effort was adequate.

A further limitation existed in the measurement of quality education. Intangible elements such as the socialization or career success are frequently not realized until a student leaves school. Even then, such indicators of quality in education are difficult to measure, due to their abstract and intangible nature.

Since this study focussed only upon the tangible aspects believed to reflect quality, only a partial observation of the overall quality was made.

## VII. SOURCES OF DATA

The data required for this study were obtained from several sources. These sources included records from the Public Schools Finance Board of the Manitoba Department of Education, school division offices, schools, and the office of the Municipal Assessment Branch.

Data on grants and expenditures as well as statistics on teacher qualifications and experience, and the number of teachers employed were obtained from the Public Schools Finance Board. School board offices supplied information on real property revenues, number of schools and classrooms in operation, salary schedules, programming and secondary-elementary unit cost ratios. Data on enrolments and audio visual supplies were obtained from the schools. From the Municipal Assessment Branch information on balanced assessments was obtained.

Attention is drawn to the fact that School Division D was a multi-district school division. Consequently the records of local constituent school districts in conjunction with those of the Secondary School Division were considered as a unit in this study. Thus it was feasible to carry out the comparison with the operations of the unitary divisions.

## VIII. TREATMENT OF THE DATA

With regard to the first sub-problem, balanced assessments and educational burden were analyzed and compared among the four divisions. It was then possible to establish an index of financial ability for comparative purposes. Next, financial expenditures were studied. Since a large portion of the expenditures were paid for by provincial grants, a comparison of grants was made. This was followed by the analysis of the foundation, general, and special levy revenues, as well as the total educational real property taxes generated in each division. Thus it was feasible to establish a comparative index of effort relative to educational real property taxes.

The data of the second sub-problem focussed on the surrogates of quality. Pupil retention indices and student-teacher ratios were first analyzed. Ratios were here calculated on an elementary and a secondary basis. Next, a comparison of staffing was made. The training of teachers and their teaching experience was examined. The analysis of these two surrogates consisted of a percentage breakdown, and the calculation of average weighted indices of training, and of experience. Following this, divisional salary scales were analyzed and a breakdown of operational expenditures was made. A comparison of audio visual supplies was then carried out by determining the number of audio visual items available per student within each division. A brief survey of special personnel and programming was also included.

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## CHAPTER II

### REVIEW OF RELATED LITERATURE

Rising education costs are a fact. Ever increasing sums of money are spent on education. The Dominion Bureau of Statistics Preliminary Report on Education (1970) indicates that between 1960 and 1970 Canada's expenditures on education rose from \$1,591,884,000 to \$5,663,838,000.<sup>1</sup> This represents an increase of over 250 per cent in ten years. In Manitoba during the same period education expenditures rose from \$60,747,000 to \$149,653,000, representing an increase of almost 150 per cent.

These increased expenditures on education can be attributed to economic factors including inflation, increased enrolments, provision of additional and improved services, and greater holding power over the fifteen to nineteen age group by the high schools.<sup>2</sup>

The Manitoba Provincial Government in 1967 passed permissive legislation for reorganizing school districts and school divisions.<sup>3</sup> The new administrative units were to be known as unitary school divisions, and the establishment of these unitary divisions had as one of its main objectives the provision of greater equality of educational opportunity. This was to be achieved through a new tax structure and a new foundation grant program. Despite the financial advantages available to school divisions electing to re-organize under the unitary plan, not all school districts in Manitoba have accepted the unitary plan, as indicated in the introductory chapter.

The problem of this study focussed on the analysis and comparison of financial characteristics and quality indicators between one non-unitary school division and three unitary divisions. In order that the questions posed in the sub-problems could be answered it was necessary to determine what researchers in the field of educational finance have written about measures of ability, effort, and quality in education.

### I. FINANCIAL ABILITY

A wide range of measures of financial ability can be found in current literature on educational finance. Most studies in financial ability, according to A. J. Burke, seek information for purposes of equalizing support, and for distributing general aid or sharing state-collected taxes.<sup>4</sup> In general these studies all ascribe to the concept of measuring the economic resources or power behind each pupil.<sup>5</sup> J. E. Corbally defines financial ability as a measure in terms of some economic, social, or political index of the ability of some unit of government to purchase a given kind, amount, and quality of goods and/or services.<sup>6</sup> The approaches used to measure fiscal capacity vary from measures of personal income and property valuation to economic indices.

#### Income as a Measure of Ability

A frequently used measure of financial ability is the income of the taxpayer. Johns and Morphet point out that, "The measure most commonly used during recent years to determine ability is the income of the people."<sup>7</sup> The Canadian Teachers' Federation,

which regularly publishes statistics in education finance, supports this view and extends it, declaring:

The best measure of ability consists of a comparison between the amount of money, and those earning it or those whose education it must provide for. Three such measures are personal income per person, personal income per pupil, and personal income per school-age child.<sup>8</sup>

Of the three measures suggested it would appear that personal income per school-age child is the most valid. The per capita income is a somewhat unsatisfactory measure of ability for it does not consider variations in educational burden. Personal income per pupil may also be less satisfactory than income per school-age child because provisions must be made for accomodating all individuals in the school age group who qualify to attend the public schools.

School age generally refers to the five to nineteen age span, although the opinions of some writers vary from this age classification. It should also be noted that all those individuals of school age who are attending private schools would be ignored if ability were considered as the personal income per pupil in the public school system. This would present a distorted picture of the actual financial ability of a school division.

A refinement of the income per school age child as a measure of ability is suggested by Johns and Morphet. They point out that "...the citizens of a community must have ability above that required to provide the bare necessities of life before they can afford a program of education beyond that incidental to the

learning required to survive."<sup>9</sup> They suggest, therefore, that the difference between personal income and all direct taxes, and living costs including food, clothing, and shelter be used in determining ability.<sup>10</sup> This view is supported by J. C. Cheal in his study of Investment in Canadian Youth.<sup>11</sup> M. C. Alkin concurs when he states:

An illuminating index of the capacity to support education is the income left to its people after payments for personal taxes, and for the basic necessities of food, clothing, and shelter. This residual income may be divided by the number of school age children in order to find the total personal income available per child for all additional expenditures of every kind, public and private.<sup>12</sup>

The amount of the exemptions for basic necessities will of course vary. Cheal suggests five hundred dollars for each wholly dependent individual supported,<sup>13</sup> while Johns and Morphet propose six hundred dollars per dependent individual as a reasonable exemption.<sup>14</sup> Actual costs will fluctuate from year to year and would consequently have to be kept up to date. In addition, consideration would have to be made for the higher cost of living in remote and isolated areas.

It is necessary to point out that the process of classifying all school age children into one group and then using the figure in determining fiscal capacity makes an erroneous assumption. Each pupil does not represent an equal cost unit. Expenses incurred for educating a high school student are greater than those for educating an elementary school pupil. M. E. LaZerte in his Canadian School Finance Study (1955) suggests the annual cost of educating a high school student is equivalent to the cost

of educating 1.6 elementary school pupils.<sup>15</sup> J. C. Cheal estimates the per pupil cost ratio of high school education to elementary school education to be 1.6 as well.<sup>16</sup>

The 1.6 correction factor, however, is the result of national studies. Obviously the ratio varies from province to province and among school divisions within a province. Mort, in a study involving New York State, West Virginia, and Mississippi, indeed found the ratio to vary from 1.3 to 1.73.<sup>17</sup> The correction factor used in this study was 1.3, based upon information obtained from the Winnipeg School Division.

The incorporation of a correction factor in determining the educational burden produces a weighted pupil unit. The use of this unit in determining ability, i.e. net personal income per weighted pupil, is probably the most adequate measure of fiscal ability discussed this far. This does not exhaust the possibilities of refining the measure. The Manitoba Teachers' Society Finance Study indicates other categories of pupils could be weighted as well, including handicapped and vocational students.<sup>18</sup>

Although net income per weighted pupil would appear to be a good measure of ability, income is limited as an index of fiscal ability. Johns and Morphet, in discussing different methods of measuring ability, suggest that income would only be acceptable as such a measure if pertinent background information such as cost of living, taxes, population distribution, and recent trends in income were available.<sup>19</sup> This would give some perspective to income as a measure of ability. However, such information is not readily available.

It should also be noted that income may fluctuate from year to year and that incomes of the self employed are only estimated. In addition, certain sources of income may accrue to individuals who are non-residents, giving rise to invalid measures of ability.

One of the most significant limitations of income as a measure of ability is the fact that although personal income tells how much money is available, school divisions do not levy taxes against such income.<sup>20</sup> School divisions may only levy taxes against real property.

Another fundamental weakness of income as a measure of fiscal capacity is due to the elusive nature of income. For one thing, income may be non-monetary as well as monetary, as indicated by A. J. Burke:

The use of income as the sole measure of relative fiscal capacity assumes that all production of goods and services enters the free market. This ignores the family, the farm, the neighborhood, and other institutions where goods and services are produced without any monetary exchange.<sup>21</sup>

Such non-monetary income is of course very difficult to trace. Consequently the use of income in measuring ability rarely includes non-monetary income, despite the fact that, "A person with high non-monetary income and low monetary income will be better able to pay local taxes than another person with equivalent income but all monetary."<sup>22</sup>

### Property Assessment as a Measure of Ability

Measures of ability must be made in terms of the resources to which a governmental unit is restricted in deriving its fund. In other words, the ability measure must be either a direct or indirect measure of the tax base. True property value is the base against which most local money is raised and hence is one of the essential yardsticks for measuring ability.<sup>23</sup>

At the local level the tax base for education finance is property, frequently restricted to real property. H. R. Jones defines the real property tax base as land and buildings and other improvements on land, as well as property which is fixed in its location.<sup>24</sup>

Although there is a trend to shift the tax base away from real property, M. E. LaZerte claims that:

Real property remains as the local support base of public education because it is one phase of government that can be administered locally, it is one in which all parents and most rate-payers are interested, and because the tax on real property can be applied and collected locally more fairly than if business were done at a remote central office.<sup>25</sup>

S. J. Mushkin reports in a study of local fiscal capacity that taxable real property is the most relevant indicator of ability when local governments are limited to this source of revenue.<sup>26</sup> J. E. Corbally is of the same opinion. He states:

If local school financial support is derived from property taxation, then measures of the property tax seem to be the only valid measures of local ability to support schools.<sup>27</sup>

Not only is property the most relevant, it is also the most widely used measure of ability, according to H. R. Jones.<sup>28</sup> This is illustrated by K. B. Budd and J. L. Charlton in their Analysis of County School Districts.<sup>29</sup>

Although Johns and Morphet support a refined measure of income as a general index of financial ability they concede that a better case can be made for using property evaluations as a measure of local ability.<sup>30</sup> A. J. Burke, a critic of income as a measure of ability, is a strong proponent of real property valuation as a measure of fiscal capacity:

The use of good equalized (full) valuation of real property to compute the hypothetical yield of a specific tax rate in a local unit probably conforms to more criteria of a satisfactory measure of ability than any other measure.<sup>31</sup>

Burke goes on to list the advantages of real property as a measure of ability:

It is possible to keep this measure current. It reflects a source of tax revenue which all can reach. The full or equalized valuation cannot be manipulated by the local unit to gain an advantage. It is also one of the most stable measures available.<sup>32</sup>

Property valuation, however, only represents a measure of wealth. Like income, property valuations must be related to the educational burden. Most supporters of real property as a measure of ability here agree with the proponents of income that a measure of educational burden or load be made in terms of enrolment, number of school age children, or some weighted pupil figure.

J. E. Corbally recommends ability be measured in terms of property valuation per school age child (6-19) or assessment per child enrolled.<sup>33</sup> Mort, Reusser, and Polley prefer property assessment per weighted school age child as a measure of ability.<sup>34</sup> This would make consideration for the potential burden rather than the actual burden, as well as the higher cost of educating secondary students.

Despite the advantages real property has over income as a measure of ability, there are certain basic limitations. LaZerte, a supporter of income as a measure of ability does not deny that the relative ability to raise taxes for schools might be made in terms of total assessed value of real property. He does point out, however, that comparisons may not be valid due to inequalities in assessment practices.<sup>35</sup> He consequently recommends that there be a supervision of local assessment practices by a provincial assessment commission.<sup>36</sup> J. E. Corbally concludes the same:

In order that assessed valuations may be used as a factor in measuring local financial ability, some device must insure that assessed valuations are fairly well standardized.<sup>37</sup>

Johns and Morphet are aware of the lack of uniformity in assessment practices and support the idea of a standardized assessment scheme. They also agree with Burke that property should be assessed at its full value for comparison purposes. However, they point out that wide differences of opinion exist about the method of determining the full value of property. For example, full assessment can not be the original cost because in many areas purchase price or original cost of construction

represents only a small percentage of current value. It can not in all instances be the sale price of property, because there may be sales among relatives or under forced conditions when the price is far below that for which other similar properties are being sold.<sup>38</sup> They recommend therefore that a fair market value be established as the assessment, when both willing sellers and willing buyers are available.<sup>39</sup>

Although Johns and Morphet as well as Corbally prefer full evaluation relative to some weighted pupil unit as an indicator of financial ability, other writers prefer equalized assessments or sales ratio indices. If indices of sales ratios are utilized the property assessments is set at a standard fraction of the current sale price or market value.<sup>40</sup>

Other criticisms levelled at the use of real property as a measure of ability are usually directed at the criterion of equity. The effects of the tax upon those on fixed incomes is usually stressed. Critics also draw attention to the favorable status of tenants who are largely exempt from paying education real property taxes. Burke submits that equity of the property tax might be increased by better administration and property assessment, and by exemption for the retired. Whatever equity can be achieved must be secured through improving the legal aspects of the tax. He contends no other measure would meet criteria of taxation as well as the property tax base would. The property tax base merely indicates what a given tax base will yield. This does not necessarily indicate equity or payment according to personal ability.<sup>41</sup>

### Economic Indices as Measures of Ability

Some economists feel that neither income nor property valuations are valid measures of ability. They recommend instead that economic indices or determinants derived from pertinent economic factors be used to compare local fiscal capacities.<sup>42</sup> These factors include the value of sales tax receipts, the number of motor vehicles registered, value of farm products, number of gainfully employed workers, income flow, and the like.<sup>43</sup>

However, recent research has thrown some doubt upon the claims of economic indices as measures of ability. H. H. Landreth claims that such indices are subject to local manipulation and are therefore invalid.<sup>44</sup> Neither do such indices directly reflect the ability to pay real property taxes. Income flow only is measured.

Corbally rejects economic indices as a measure of fiscal capacity on the grounds that economic indices do not measure the ability to generate an education tax:

The main objection to an index of tax paying ability is that it does not measure what it purports to measure. It has little validity.... When the only tax base available to provide local funds for schools is, with minor exception, the property tax, it does not seem valid to bring in other factors to measure local ability to support schools. If local school financial support is derived from property taxation, then measures of property tax seem the only valid measures of local ability to support schools.<sup>45</sup>

Burke takes the same stand:

States which have developed economic indices of local ability can not be certain as to what they are measuring by such indices. These indices are no substitute for accurate estimates of the yield of a specific local tax system with uniform rates. Although the property valuation is not a perfect measure it can be made to meet more criteria as a measure of local ability than economic indices.<sup>46</sup>

However, one cannot discount the fact that such economic indices may supply noteworthy information which may provide some perspective to real property as a measure of fiscal ability.

#### Summary

Three main categories of ability measures are found in literature on educational finance. These include personal income, property assessment, and economic indices. Of these, property assessment appeared to be a valid measure of local ability, while income was better suited to the measurement of ability at the provincial level. Economic indices do not appear to be a valid measure of ability, although they provide useful supplemental information.

It was noted that ability is a relative or comparative measure. A valid index of ability must therefore attempt to keep other variables constant. The most significant of these is the student enrolment or burden. While both income and property assessment as a measure of ability take cognizance of the educational burden, economic indices were not found to make such considerations.

In dealing with burden the necessity for the use of weighted pupils was noted by a number of writers. Attention was also drawn to the fact that such correction factors may vary from 1.3 to 1.6 or more.

The measurement of ability in this study focussed mainly on the ability of local real property to pay educational costs. Balanced assessments of real property were divided by weighted pupil factors to yield a measure of local ability.

## II. EDUCATIONAL EFFORT

Educational effort was defined as the degree to which residents of a school division are financially supporting the educational needs of the division. An adequate measure of effort was difficult to determine because meaningful indices of effort are expressed in terms of financial ability. "It is impossible to think about local effort except in terms of some measure of fiscal ability,"<sup>47</sup> according to Burke.

### Effort Relative to Support and Ability

The degree of educational effort displayed by a school division may be measured in a number of ways, some being preferable to others. Educational expenditure per pupil is regarded by some writers as an indicator of effort.<sup>48</sup> However, it is a crude measure, for a school division with a high ability may be able to expend a larger amount of funds than a less well to do division could expend with a much higher effort. In the words of J. E. Corbally:

The amount of money expended per pupil for public education does not necessarily indicate relative effort. A low ability state may make a great financial effort to support schools, and yet not produce as much revenue per pupil as can be produced with little effort by a high ability state.<sup>49</sup>

At best per pupil expenditure as a measure of effort gives only some indication of the investment made in education. Valid measures of effort would appear to be made only in relationship to financial ability. Most acceptable measures of effort do attempt to show the relationship between expenditures and fiscal ability, or the revenue raised for educational purposes and fiscal ability.<sup>50</sup>

The simplest measure of educational effort would appear to be the proportion of wealth spent on education. I. W. Paterson claims, "The most common indicator of effort is the total educational expenditure expressed as a percentage of the total personal income."<sup>51</sup> Such a measure of effort is also proposed by Johns and Morphet.<sup>52</sup>

M. E. LaZerte maintains that such a measure of effort can be made more valid if net income rather than gross income is used. He proposes the ratio of local educational revenue to personal income after taxes as an index of educational effort.<sup>53</sup> A further refinement is proposed by Cheal. He recommends expressing the current educational expenditures per weighted school age child as a percentage of personal disposable income per weighted school age child.<sup>54</sup>

While Cheal suggests current expenditures in relation to ability, LaZerte suggests educational revenue generated in comparison to ability be used as a measure of effort. Writers such as Cheal are of the opinion that capital expenditures bear no constant relationship to the educational program.<sup>55</sup> Such expenditures would however be included if the revenue raised is utilized in calculating effort. Whether or not such expenditures bear a relationship to the educational program is not at issue at this time. The fact remains that capital expenditures must be paid out of tax dollars, and therefore represent an effort on the part of the tax-payer. Many writers in the area of educational finance are of this opinion and measure effort accordingly.

O. A. Hickrod considers educational effort as the ratio of the local revenue raised to either an income or property evaluation measurement.<sup>56</sup> Johns and Morphet also measure effort in terms of local educational tax revenue and ability.<sup>57</sup> J. E. Corbally is likewise of the opinion that effort should be measured in terms of revenue raised and ability:

At the local level the most valid factor for measuring effort involves a comparison of assessed or true valuation of property, and the dollars raised from local sources for school support.<sup>58</sup>

Some writers in the area of school finance suggest that the best measure of local effort in support of education is the educational tax rate computed by dividing the amount of money actually raised for education by the amount of taxable property fairly assessed.<sup>59</sup>

It is quite possible that the mill rate is widely used as a measure of effort, as indicated by Budd and Charlton.<sup>60</sup> However, LaZerte cautions against the misinterpretation of the tax rate as a measure of effort. He claims that the tax rate would only be a valid measure of relative effort if true equalized assessments were available for purposes of comparison.<sup>61</sup> Unfortunately this condition does not always prevail. In reality the tax rate makes no consideration for differing fiscal capacities. It would appear safe to state that the tax rate could be used as a measure of effort only if fiscal abilities are equal and if the educational burdens are the same.<sup>62</sup>

#### Other Measures of Effort

An indicator of effort proposed by Kimbrough is the percentage of families in excess of \$10,000 per annum.<sup>63</sup> He maintains this index of effort is the best predictor available. (It is interesting to note that the Canadian Teachers' Federation considers this index to be a measure of ability).<sup>64</sup> Although affluent districts may spend larger sums of money per pupil, the indicator proposed by Kimbrough makes no consideration of ability. This is most crucial, for educational effort is more than the per pupil expenditure: Effort is the relationship between ability and the per pupil expenditure, or the relationship between ability and the revenue raised per pupil.

Another measure of effort that merits attention is the income elasticity constant as proposed by P. L. Maltby.<sup>65</sup> This constant is calculated as the ratio of the percentage increase in expenditures on education to the increase of one per cent in personal income. Both are considered over a specific period of time. If the calculated index is unity, then the educational expenditures increased in direct proportion to the increase in personal income, and a school division has maintained its level of effort, i.e. there was no increase nor decrease in effort. If the index is less than one, this may indicate opposition to increased educational expenditures as the effort has decreased. If the index is greater than one, the effort put forth has of course increased.

Hickrod, in a study of 122 school districts in the southeastern United States, utilized an effort measurement based on the elasticity concept and concluded that this technique was a hallmark in school finance research.<sup>66</sup> Despite Hickrod's enthusiasm for the elasticity constant as a measure of educational effort, few others have attempted to apply the concept to the field of education. This may be due to several reasons. Income measurements have inherent difficulties as discussed in a previous section. Hence the index is more difficult to establish than would first appear. The income elasticity constant gives no indication of how educational expenditures or the revenue generated compares to the tax base, or ability. Yet a measurement of effort supposedly indicates to what degree available resources are used. Furthermore the elasticity constant indicates only how increases in educational

funds compare to increases in personal income. No consideration is made of the adequacy or inadequacy of previous levels of expenditure or revenue. If an inadequate level of effort existed at a prior time and the ensuing elasticity constant was determined to be one, then the inadequate situation may still persist. This however would not be indicated by the elasticity constant. All it would appear to measure is the level of increase in educational revenue or expenditure in comparison to the increase in personal income.

#### Causes for Variation in Effort

While effort is broadly defined as the relationship between educational revenue and fiscal capacity, fiscal capacity is not the sole factor determining the sum of money to be raised for educational purposes. The vigor of local support affects the revenue raised and hence the level of effort. It should be noted that the mere fact that a school division has sufficient financial ability to support public education does not guarantee that public education will receive sufficient support. The provincial governments have seen fit, therefore, to establish minimum acceptable educational programs which school divisions must provide. Educational expenditures over and above the mandatory level may be largely determined by the attitude of the local public toward education, for each man spends according to his own scale of values. It is quite possible then that educational effort and the allocation of funds for education in excess of the minimum required can become a political function.<sup>67</sup> Johns and Morphet support this opinion:

The effort made by the people in each state to support public schools is influenced by many factors--their interest in and attitude toward public education, their "feeling" about government and taxes, the tax structure in the state in which they live, the amount of taxes they pay for purposes other than public schools, whether they have children or grandchildren in school, their reaction to the programs provided by the schools in the community in which they live, probably their reaction to the party in power, and to the kind of leadership provided.<sup>68</sup>

### Summary

Educational effort was defined as the degree to which residents of a school division are financially supporting education. The majority of writers in the field maintain that it is not possible to measure local effort except in terms of some measure of ability. Despite this, several different measures of effort were found to be used. While there appeared to be no agreement as to which measure is the best, it would appear that the most appropriate one was the ratio of the local educational real property revenue generated per weighted pupil to fiscal ability, i.e. educational effort = 
$$\frac{\text{revenue}}{\text{balanced assessment}}.$$

The other two measures of effort reviewed were the percentage of families with incomes in excess of \$10,000 per annum, and income elasticity. Both were found to have fundamental weaknesses in that they did not make any consideration of the relationship between educational revenue or expenditures, and fiscal ability.

Due attention must be given to the fact that the measure of educational effort, like ability is a relative measure. The numerical value of the index of effort in itself tells us little.

Conclusions about comparisons of effort are inconclusive until steps are taken to eliminate undesirable educational effects of low effort and poorly planned budgets.

### III. QUALITY IN EDUCATION

In recent years many criticisms have been directed at the quality of education. One source of criticism is the concerned parent who wonders whether his or her children are obtaining an education of acceptable quality in light of innovative trends. Another source of criticism is the local resident who questions the rationale behind school district re-organization and is concerned with its effect on the community. However, by far the greatest amount of criticism comes from the ordinary tax-payer who is required to provide ever increasing revenues for education, and yet cannot find any indication of improved quality in the end product of education.

Such criticisms focus chiefly on three aspects of quality. These include methods of measuring quality, the cost-quality relationship, and the size-quality relationship. Before an adequate measure of quality in education may be determined, it is essential that each of the three aspects be clearly comprehended.

#### The Quality Concept in Education

The qualitative aspects of education are numerous and varied. Certain aspects are subjective while others are objective.

Despite the complex nature of quality, many educators maintain that some minimum acceptable standard of education exists. Furthermore, many researchers and the public believe quality in education may be defined and measured.

Characteristics of quality education. A satisfactory definition of quality in education in operational terms is still forthcoming. A frequently used definition of quality is the degree to which an educational program permits the full development of an individual's abilities.<sup>69</sup> This however, is a general and vague definition, and does not indicate how quality may be measured.

Paul Mort, who has done extensive research in quality of education, suggests the following are characteristics of good quality education:

1. The basic skills should include speech and learning how to think, both considered matters of continuous constructive concern for all children.
2. The basic skills should be taught in such real or realistic situations that there is enhancement of the probabilities that children of all levels of ability not only will master these skills and retain them, but will also make intelligent use of them in solving problems met in later life.
3. The range of knowledge should be extended in the scientific and social fields.
4. The knowledge taught should be selected for its probable usefulness in solving life problems rather than solely for its "cultural" values.
5. The knowledge taught should be learned in real or realistic situations in order to enhance the probabilities that children will not only learn them and remember them but will also make intelligent use of them in solving problems in later life.

6. The schooling years should be used to discover the aptitudes of individuals for the arts we live by in our complex society, both useful arts and fine arts.
7. The schooling years should be used to develop individual aptitudes into knowledge and skills that will enhance life for the individual and for our people, both culturally and economically.
8. Children and young people should be under continuous positive guidance in the development of good life behaviour habits in such areas as personality, citizenship, character, and home life.
9. Children and young people should be under continuous positive guidance in the development of knowledge and behaviour habits that will promote mental and physical stamina.
10. The schools should be so operated as to use the personal resources of the citizens not only to help the school but also to give citizens experience in self government.<sup>70</sup>

Again the question of how such aspects of quality in education are to be measured is left unanswered. Furthermore, it could be argued that all the objectives of education are not considered in the list. In effect, the problem of determining quality in education is one of determining the educational objectives, and attempting to measure the degree of success to which these goals have been achieved.

Two basic stumbling blocks would appear in discerning quality in education. The goals of education are not agreed upon by educators, nor by the public, and the degree of goal achievement is difficult to measure. There are other difficulties, as indicated by H. R. Jones:

Education as reflected in knowledge of subject matter has been measured with fair exactitude and the ability to apply that subject matter, particularly in life situations, has been partially measured. But the ability to think creatively as a result of the instructional program has not yet been measured with validity. The measurement of attitudes, loyalties, and values, and the extent to which they are an outgrowth of the instructional program has barely been tapped. Many of the outcomes of education are not fully demonstrated until a young person enters the responsibilities of adulthood; many of them are the fruits of home, church, peer groups, mass media, and many other influences, all intertwined with the direct results of the school program. For these reasons studies of quality in education have had to rely on secondary measures of quality.<sup>71</sup>

Despite the difficulties researchers face in measuring quality in education, they need not be discouraged in attempting to improve the measurement. For, "Without some prediction of quality, however crude or subjective, there is no rational basis for deciding among alternatives to improve educational programs."<sup>72</sup>

Measures of quality. Since there is widespread opinion as to what quality education is, a wide range of measures have been used to indirectly measure the quality of an educational system.

Jerry Miner, in Social and Economic Factors in Spending for Public Education<sup>73</sup> and J. C. Cheal in Investment in Canadian Youth<sup>74</sup> both use pupil retention rates as a measure of quality in education. This index consists of the proportion secondary school enrolment is of the total enrolment. Cheal expresses the view that greater quality is indicated by greater productivity and output, and this is usually associated with longer periods of education. Hence, the greater the enrolment through high school the greater the productivity, and the greater the quality.

Others reason that greater productivity is associated with greater ability of the intellect and greater knowledge. Intelligence quotients, they maintain, are proportionately greater for those who remain in high school than for those who drop out. Hence retention rates again measure the quality of education. An associated measure would be the drop-out rate. A different numerical index would be obtained but the same variable would be measured.

It might be suggested that academic achievement of students may more directly measure quality in education than retention rates. This measure has in fact been used by the public at large, by many departments of education, as well as by universities. R. N. McKean observed that some economists have come to believe that achievement test scores in basic subjects while not perfect, could be used as a relatively good indicator of quality of educational output.<sup>75</sup>

With the trend away from externally set examinations this measure of quality has become difficult to ascertain. In addition, it can be noted that high examination marks do not necessarily indicate the ability to transfer this learning to the outside world, nor does a final mark reflect how much of what was examined upon was actually learned in the school.

Maureen Woodhall suggests the use of potential lifetime earnings as a measure of quality.<sup>76</sup> R. G. Spiegelman recommends this measure too, but would also include the reduction in juvenile crime rate and the reduction in unemployment as measures of quality.<sup>77</sup> J. Burkhead adds the level of reading norms and the

amount of post high school education attained by graduates to the list of quality measures.<sup>78</sup> (It could be argued, however, that the amount of post secondary education or the percentage of high school graduates attending colleges and universities may reflect intelligence or the socio-economic status of the individual and the parents rather than the quality of the education received). He also maintains that quality of teaching, a crucial aspect of the quality of education, may be judged by the opinions of students, other teachers, educational organizations, parents, and employers of students in attempting to assess educational quality.

Dr. C. C. Abt, carrying out research for the United States Department of Health, Education, and Welfare, based quality measures upon such indicators as teacher education and experience, degree of recency of curriculum materials, student-teacher ratios, and the amount of instructional equipment per student.<sup>79</sup>

C. F. Faber, in studying twenty of the largest school districts in the Midwestern United States, found a very significant positive correlation between the quality found in the school districts and the qualifications of the teachers.<sup>80</sup> Quality was here judged by the directors of supervision for the state department of public instruction. Being familiar with the districts they presumably were able to make valid judgements as to the quality in each district. Welch, on the basis of multiple regression analysis, also concluded that one of the two most important determinants of quality was the training of the teachers.<sup>81</sup> H. J. Kiesling in

his study High School Size and Cost Factors, found that the most consistent measure of educational quality was the curriculum, while school facilities and services were found to be moderately good indicators of quality.<sup>82</sup>

Other factors that were found to be considered in measuring quality included the provision of such services as guidance, psychological counselling, and medical or dental care.<sup>83</sup> Budd and Charlton are of the opinion that quality may also be measured by the number of teachers in a school, the number of grades per teacher, the length of the term, and whether or not the school has a split term.<sup>84</sup>

J. N. Finch in Testing the Cost Yarkstick in Cost-Quality Studies used the following as criteria of quality:

1. Amount spent for library books and audio visual supplies per pupil.
2. Number of teachers per 1000 pupils in attendance.
3. Number of librarians per 1000 pupils in attendance.
4. Number of guidance counsellors per 1000 pupils in attendance.
5. Number of clerks and secretaries per 1000 pupils in attendance.
6. Number of teachers with Masters degrees per 1000 pupils in attendance.
7. Minimum teaching salary.
8. Maximum teaching salary.
9. Teaching salary after ten increments at the masters level.<sup>85</sup>

In a United States study involving more than 1200 school districts W. S. Vincent used a similar set of criteria to measure quality.<sup>86</sup> Eells lists a series of factors that he believes will measure quality. Some duplicate previously mentioned measures, while others have not yet been referred to.

1. Median school years completed by persons 25 years of age and over.
2. Percentage of the population 25 years of age and over with more than five years of schooling.
3. Percentage of the population 25 years of age and over with at least four years of high school.
4. Percentage of the population 25 years of age and over with four or more years of college.
5. Percentage of selective service registrants disqualified by mental tests, including those who failed the physical as well as the mental tests.
6. Enrolment in the public elementary and secondary schools as a percentage of school age population.
7. Average length of school term in days.
8. Average daily attendance as a percentage of the number of pupils enrolled.
9. High school graduates in a given year as a percentage of the eighth grade enrolment four years earlier.
10. Percentage of elementary school teachers with four or more years of college preparation.<sup>87</sup>

William Barron, in drawing up a very encompassing list of measures of quality in education attempts to bring some order to the variety of measures of quality by categorizing them into objective and subjective measures.

Objective measures:

1. Achievement tests.
2. Percentage of college entrants.
3. Individual attention provided in the classroom as determined by an observer recording the time spent in such an activity.
4. Length of the school year.
5. Provision of books and instructional materials.
6. Average daily attendance.
7. Holding power.
8. Teacher-pupil ratios.
9. Functions of the school.
10. Teacher experience.

11. Teacher education.
12. Teacher salaries.
13. Special classes.
14. Economic returns.
15. Advance placement at post secondary institutions.

Subjective measures:

1. Development of gross behaviour patterns.
2. The teaching of skills and areas of knowledge in a realistic fashion.
3. Discovery and development of special aptitudes.
4. Staffing balance.
5. Amount of consideration of the individual.
6. Continuous course revision.
7. Extent of supervisory and administrative services.
8. Employment of high quality personnel.
9. Extent of democratic operation.
10. Community resources.
11. Cultural returns.<sup>88</sup>

Barron concludes that:

Quality education includes many factors not amenable to statistical analysis. There are no instruments to measure such subjective quality factors directly. Although these traits are observable, the extent of their measurement is quite subjective.<sup>89</sup>

The use of quality control charts represents another procedure for measuring the quality of education in an indirect manner. This technique is based upon the assumption that various financial factors bear a significant relationship to educational quality. Such factors as the financial climate, staff ratios, salary levels, budget allocation, and net current expenditure breakdown, when graphed against provincial norms indicate how a school system's spending pattern differs from the provincial pattern. Presumably one can detect immediately where the spending is out of line, and then analyze the situation to determine if

there is a good reason for such divergence, or whether it is detrimental to a division's educational program.<sup>90</sup>

Such a measure of quality is of course a relative measure. It tells an administrator only that for certain expenditures the school system is receiving a quality of education that compares in a specific manner to the provincial norm. In addition, the quality inferred from the financial factors is dependent upon the cost-quality relationship, which may not be a perfect one.

A most interesting tool used in measuring quality was developed by Paul R. Mort. This instrument, called The Growing Edge, was designed to produce an index of adaptability. It indicated the relative responsiveness of school districts to innovative methods of teaching and operating schools. The degree of adaptability was presumed to indicate the quality of education in a district. The instrument itself purported to measure four variables or dimensions of educational quality:

1. The teaching of skills in a real or realistic fashion and the teaching of a wider range of skills.
2. The teaching of areas of knowledge realistically.
3. The discovery and the development of special aptitudes of the individuals through test and try-out.
4. The development of gross behaviour patterns such as citizenship, character, and thinking which are assumed to be developmental characteristics.<sup>91</sup>

The Growing Edge was extensively used by Mort in the forties. In 1949 L. H. Woollatt utilized it in a cost-quality study,<sup>92</sup> and in 1956 O. Furno used The Growing Edge to measure educational quality in an attempt to discern the time lag effects

of expenditure policies.<sup>93</sup> Although various other studies have used The Growing Edge as well, it does not have the high acceptance today that it had in the 1940's and 1950's.

Summary. There is general agreement that good instruments do exist for measuring certain aspects of educational quality (eg. standardized tests in reading, comprehension, and arithmetic). However, such statistics only tell us the extent to which a system has achieved some degree of mass education. They tell us nothing about how a system has achieved its overall objectives. Other aspects of quality in education such as the ability to conceptualize, creativity, judgement, and personality orientation appear to lack valid measures. Frequently these abstract abilities appear of a great deal more importance than skills in reading, arithmetic, or the like.<sup>94</sup>

It would appear safe to conclude that no one measure of quality is by itself an adequate measure. For, "The quality of education is the product of a matrix of interacting forces. What is required is research aimed at identifying and measuring as many of these forces as possible."<sup>95</sup> The various measures suggested, when considered in combination, would appear to give a relatively valid and complete indication of the quality of education in a school division. A major problem lies in the fact that no mathematical model has been developed to give a combined index of quality. Mort's Growing Edge is an attempt in this direction, but it only considers four aspects of quality.

The feeling that some ultimate standard of quality in education does exist appears to be widespread. Quality in education is generally felt to be definable and measurable. The widely held definition of quality education as education which allows each individual to develop his talents to the limit of his ability is, however, extremely difficult to define in operational or measurable terms:

We can measure retention of factual information with fair accuracy, and we can assess the acquisition of skills, but these are not the heart of the matter. The fundamental, long range aims of educational institutions are concerned with the student's quality of thinking, their intellectual attitudes, their perceptiveness, their power to form independent judgements and to weigh values, and their sense of personal responsibility. These characteristics are simply not measurable.<sup>96</sup>

#### The Cost-Quality Relationship

As resources become more scarce, the focus of attention on efficiency becomes intensified. R. G. Spiegelman claims that the use of cost-quality analysis as applied to education can be justified essentially on the basis of achieving efficient allocation of resources.<sup>97</sup>

Financial resources are scarce. Other social services are competing with education for the tax dollar, and if education is to continue to maintain its high position in the budget priorities list, educators will have to prove that educational investment is worthwhile. Accountability in education and performance budgeting are terms no educator can afford to ignore. Increased financial budgetary allocations will in the future have to be justified.

Changing views of the cost-quality relationship. Several early studies reportedly found a high measure of association between cost and quality. In 1925 W. C. Bagley found that a correlation of .92 existed between the expenditure levels in education and the number of graduates listed in Who's Who (1924).<sup>98</sup> The validity of studies such as this have been questioned, and it is not surprising therefore that as late as 1933 the idea that expenditure levels were related to quality in education was still a matter of conjecture.<sup>99</sup>

This view changed and the general acceptance of the relationship became so strong that in the fifties no one seriously doubted the existence of a positive relationship between school costs and quality.<sup>100</sup> In fact the foundation program concept has taken for granted that there is a strong relationship between cost and quality.

As educational expenditures in the late fifties and the sixties increased, and taxes rose proportionately, the public began to question the rationale behind increased expenditures when they could not observe comparable increases in the educational end product. Thus the acceptance of the relationship between levels of expenditure and quality in education has undergone a full cycle, fluctuating from non-acceptance to virtual unquestioned acceptance, and then back to a rejection of the relationship.

Cost-quality studies. K. B. Budd and J. L. Charlton, in their Analysis of County School Districts, found that schools of high expenditure were generally of a better quality than schools

of lower expenditure.<sup>101</sup> Woollatt's investigation into the relationship utilizing the Growing Edge as a measure of quality brought the same conclusion. "Within high expenditure schools there was a direct relationship between expenditure and quality. The overall correlation was found to be .59, and supported earlier findings of Mort."<sup>102</sup>

The Pennsylvania studies of 1960 brought forth the same evidence. High expenditure schools generally do a better job of teaching basic skills and knowledge, they far excel low expenditure counterparts in individualizing instruction, and use processes designed to develop creativeness, ability to think critically, and the ability to solve problems.<sup>103</sup>

From 1957 to 1967 the New York State Education Department conducted a quality measure project, using achievement test scores from four consecutive years as a measure of quality. This study involved one hundred school districts, and in comparing the "good" schools with the "poor" schools the following observations were made:

1. The good schools spent 25% more per pupil.
2. The good schools hired five more professionals per 1000 pupils.
3. The good schools had staffs that were more widely travelled and experienced.
4. The good schools had better salary schedules.<sup>104</sup>

The existence of a positive relationship between cost and quality in education is further supported by other studies. H. J. Kiesling found that considerable variation in pupil performance was explained by the per pupil expenditure at advanced levels of statistical significance even after carefully accounting

for intelligence and socio-economic backgrounds.<sup>105</sup> Mort, Reusser, and Polley maintain that no single item of information about a school system has been identified that yields as much insight into the character of the education it may be expected to produce as the expenditure level. The correlation has been confirmed so often that it has become reasonable to suspect some error in measurement when contrary results appear.<sup>106</sup>

Since the level of educational quality appears to be correlated with the level of expenditure some researchers have hypothesized that teachers' salaries, which make up the largest single expenditure item in education, may be used to predict quality. O. Furno is one of the supporters of this approach. He claims:

Every research study conducted on the relationship between teachers' salaries and school quality has shown the correlation to be positive and high. High salaries make it possible for schools to:

1. retain competent, experienced teachers
2. employ well qualified beginning teachers in the face of changing dollar values and challenges from other professions.<sup>107</sup>

On the other hand, low expenditures tend to mean inadequate leadership, large classes, poor teachers and poor teaching, and many other features that contribute to low quality.<sup>108</sup>

H. R. Jones, in analyzing the cost-quality relationship made the following observations:

1. The positive relationship between cost and quality is most evident at the extremes.
2. Some schools of high cost are not schools of high quality.

3. When increasing funds have been provided to school districts of high quality which are in the upper end of the cost distribution over a period of years, the increasing funds continue to result in increasing educational returns. It would seem that there must be a point of diminishing returns, but this point is not yet in sight.
4. The one factor which consistently has the highest positive correlation with quality is educational expenditure, usually expressed in cost per pupil.
5. The generalization seems warranted that high quality schools do require above average expenditures. Although above average expenditures alone do not guarantee good schools, low investments in education do tend to doom schools to mediocre programs.
6. Increasing expenditures for schools do not automatically, immediately, and in direct proportion bring about an increased quality of education. There is a lag between increased investments and returns in quality.<sup>109</sup>

O. Furno investigated the lag and concluded that expenditure policies today may have ineradicable effects, good or bad, for up to twenty-five years. The maximum impact he claims occurs in about seven years.<sup>110</sup> J. F. Bowyer investigating the lag in the cost-quality relationship, determined the maximum impact to occur within ten to twelve years.<sup>111</sup> It is thus apparent that the quality at any given time is more likely to be related to expenditures over a period of time than to expenditures at a given time.

The studies in cost and quality of education have found the two variables to be in a positive relationship. This finding has generally been accompanied by the assumption that the association was linear and possibly accelerating. This has

not been substantiated however. Several recent studies in the relationship have found it to be non-linear.<sup>112</sup> There is a need for further research to determine optimum allocations of resources.

Thomas Payzant supports this view. He suggests there may be a limit beyond which additional spending has little impact upon educational quality. He maintains, "Across the board increases in expenditure may not positively affect the educational product. Unless educational funds are spent in a particular manner, there is no guarantee that quality will increase."<sup>113</sup>

Summary. Research into the nature of the cost-quality relationship has attempted to prove that the higher the expenditure for education, the higher the quality of the product. There appears to be considerable evidence that under favorable conditions, when all other factors are reasonably equal, increased expenditures within reasonable limits do result in better programs of education.

There is however, danger in assuming the relationship to be perfect. Most studies have not exceeded the .60 measure of association. This value is far from perfect. Despite this, writers in the field express the opinion that the level of expenditure is the strongest single factor affecting the quality of education.

Causality, however, remains to be demonstrated between the level of expenditure and the educational quality. The expenditure level is not the only factor affecting quality. A complex of factors influences not only the quality but also the level of expenditures. The influence of each factor individually,

and the influence of the various factors collectively must be considered.

It has been suggested by several researchers that the relationship of cost and quality is curvilinear rather than a direct one-to-one proportion. This makes it necessary when planning a budget to analyze the pattern of expenditures and to determine where the most returns will be realized. The fact that a lag is associated with the educational investment makes it imperative that spending policies be such that educational quality will not decrease for the detrimental effects may not be observed for seven to twelve years thereafter. In the meantime administrators might conclude they are maintaining a constant level of quality for less money.

What can thus be concluded about the cost-quality relationship? Certainly the positive correlation found can not be denied. In addition, it must be noted that quality education was generally found only in school districts where per pupil expenditure levels were high. To assume, however, that high expenditure levels would guarantee quality education would be foolish. Patterns of spending must be analyzed in order to establish priorities. This is essential if maximum returns in the form of educational quality are to be obtained from additional investments.

#### The Size-Quality Relationship

An important issue of the same nature as the cost-quality relationship is the size-quality relationship. It has frequently

been found that as school district enrolment decreases the per pupil expenditure increases rapidly.<sup>114</sup> If it is true that quality varies inversely with size, then much of the unexplained variance found in cost-quality studies could likely be explained by the size factor which affects the cost per pupil. The inverse relationship between quality and size, however, has not been proven and is still at issue.

The size-quality relationship exists at three different levels in education. These are the school division level, the school level, and the class level. Each will be dealt with in turn.

Division size and quality. A. J. Netusil and R. P. Monatt, investigating the size-cost-quality relationship of ninety school districts in three states in 1966, found many small and medium sized districts were not providing adequate educational programs. Larger school districts, they maintain, were able to obtain the services of better and more qualified personnel.<sup>115</sup> They continue by stating that in order to attain the kind of per pupil economy and the availability of special services deemed desirable, the minimum enrolment should be within the range of three thousand to five thousand pupils.<sup>116</sup>

Swanson's studies as reported by W. S. Vincent in New Lights on the Size Question, supports the view that a positive relationship exists between school district size and the quality of education afforded.<sup>117</sup> He points out, however, that the relationship is non-linear and that an optimum level exists. The maximum critical size may vary according to local circumstances.

In an investigation of 1,222 school districts in the United States W. S. Vincent found that excessive school district size reduces the quality of education.<sup>118</sup> He explains that the effectiveness of the administrators in developing and maintaining adequate programs was adversely affected. It thus appears that the size and quality are related within limits. An optimum school size district supposedly exists. The problem is that this critical size varies and must be determined for each area according to local circumstances.

School size and quality. There is an abundance of literature on the topic of school size and quality. However, the same general situation prevails that was found to exist in the relationship between district size and quality.

H. J. Kiesling, using student performance on standardized tests as a measure of quality, reported that the school size-quality relationship was negative with surprising consistency, even after allowance was made for the effects of pupil intelligence and socio-economic background.<sup>119</sup>

Johns and Morphet report the opposite findings. They state:

Generally speaking, small schools tend to be both expensive and unsatisfactory. Relatively small high schools are even more expensive and probably less satisfactory than small elementary schools. The small number of pupils per teacher usually found in such schools is the greatest single factor contributing to high costs, and the limited range offerings further tend to restrict the adequacy of educational opportunities. Where small isolated schools are necessary, higher costs can be justified, but not otherwise.<sup>120</sup>

Maureen Woodhall, reporting on a study by Welch, concludes the same.

"School size along with teacher qualifications apparently are the most important determinants of quality."<sup>121</sup>

E. R. Altman is hesitant to take sides. In a study carried out in 1959 she used university marks as indicators of quality of the secondary schools the students had attended. Her conclusion regarding size and quality was that graduates of larger schools (enrolments in excess of 900) did not achieve significantly higher marks than graduates of medium sized or small schools.<sup>122</sup> If a relationship does exist between school size and quality, it was not discernible in her study.

Some enlightenment may be provided to the diversity of opinions by two additional studies. Smith ascertained that a relationship between school size and quality indeed existed, and was positive up to a point. The data showed that schools with enrolments less than two hundred to four hundred pupils were paying a premium for inferior programs. A maximum correlation was found for enrolments from eight hundred to twelve hundred. After this level of enrolment the correlation decreased.<sup>123</sup> Grey determined similar findings. There appeared to be an increase in quality as school size increased with a plateau region for schools with enrolments from four hundred to one thousand.<sup>124</sup>

Class size and quality. Literature pertaining to this topic is as abundant as that on the quality and school size relationship. Dr. C. C. Abt listed the teacher-pupil ratio as one of a number of measures of quality, assuming as many others

have, that a relationship between quality and class size exists.<sup>125</sup> Many departments of education in administering foundation grants presumably recognize a relationship between class size and quality, providing a teacher grant for a specified number of pupils. J. C. Cheal, however, was unable to discern any relationship between class size and the quality of educational output.<sup>126</sup> Many others currently question the relationship as well.

Simon Haskell in an investigation of the performance of 103 pupils in various class settings found no significant difference in performance despite varying class sizes.<sup>127</sup> R. O. Nystrand and Fred Bertolaet expressed the same conclusion:

Pupil-teacher ratios in instruction showed a consistent lack of relation to achievements among all groups, under all conditions.<sup>128</sup>

However, it must be pointed out that academic achievement is only one aspect of quality in the school product. Personal development and attitude formation, to mention only two, were not considered. In fact, Haskell points out that, "There is rather strong evidence to suggest that the social organization of the groups significantly affected student attitudes although it can not necessarily improve academic performance."<sup>129</sup>

Summary. Although diverse opinions and research findings exist on the size quality relationship, it appeared that as the size of schools and school districts increase, organizational complexity increases, which in turn reduces the effectiveness of the schools' administrations. It was suggested that optimum enrolments exist for schools and these varied from a minimum of

two hundred to four hundred, to a maximum of eight hundred to twelve hundred. A minimum suggested school division size was an enrolment of three thousand to five thousand. Additional research to support these figures would appear to be imperative.

The general positive relationship assumed between class size and quality was found to be seriously questioned. No statistical data has turned up a significant positive relationship between class size and quality. If a rationale for class size exists it is because a certain size is appropriate to a specific activity. However, there is no specific and universal student-teacher ratio.

#### IV. SUMMARY

The literature reviewed in this chapter focussed on the topics of financial ability, educational effort, measures of quality, the cost-quality relationship, and the size-quality relationship.

Three main categories of financial ability measurements were found: personal income, property assessment, and economic indices. While there was some disagreement as to which was the best measurement of ability, it was generally felt that at the local level property assessments were more appropriate, while income was more suited to measuring fiscal ability at the provincial level. Economic indices were generally inadequate as a measure of ability, although they provide useful supplementary information on income flows.

Effort was defined as the relationship between the educational revenue collected and fiscal capacity. A variety of refinements were suggested to make the effort index more valid. These included the use of net income, weighted pupils, and equalized assessment.

The most suitable measurement of effort suggested for the local level was the ratio of revenue collected per weighted pupil to the financial ability (i.e.  $\text{effort} = \frac{\text{revenue}}{\text{balanced assessment}}$ ). At the provincial level the best suggested index was the ratio of the revenue per weighted pupil to the net personal income per weighted pupil (i.e.  $\text{effort} = \frac{\text{revenue}}{\text{net personal income}}$ ).

Since effort like ability is a relative measure, the index itself is of little significance. Conclusions about the comparison of the indices must be followed up with action to correct deficiencies where they exist in order to remove any undesirable educational side effects.

It is virtually impossible to measure the quality of education directly. Although some of the academic outputs can be measured, numerous other aspects of education can not be measured. These can only be inferred from other indirect measures. Some of the more frequently used surrogates are retention rates, percentage of college entrants, future life-time earnings, reduction in juvenile crime rate, reduction in unemployment, recency of curricula, education and experience of teachers, school facilities and services, The Growing Edge, and graphical analyses of spending patterns. Whenever quality is measured it

must be noted that various aspects of educational quality exist. A good assessment of educational quality should measure as many of these aspects as possible.

The direct relationship between cost and quality was found to have been generally accepted in the fifties. In recent years it has been questioned. Limited resources demanding increased efficiency have resulted in more detailed studies of the relationship between cost and educational quality. It has been found that the relationship is only moderately strong (.60), and that there is an optimum point after which quality does not increase commensurately with increased investments. Thus the pattern of spending, i.e. the allocation of funds, is a critical issue in budgeting.

Research has also shown that a time lag persists between the time increased investments are made and the time increased returns are realized. The converse of course has been found to be equally true. Returns on investments may not show up for seven years, thus immediate results are rarely obtained.

Since a variety of factors affect the quality of education, high educational expenditures are not necessarily the only cause for high quality. The most convincing argument writers present in support of the relationship between quality and cost is the fact that although high quality education is not always prevalent in high expenditure school divisions, high quality education is rarely found in low expenditure divisions.

The relationship between quality and the size of school divisions, schools, and classes was also reviewed. The general impression writers leave with regard to the first two relationships is that there is a positive relationship but it is curvilinear. They suggest an optimum point exists after which quality does not increase proportionately with enrolments. Research in the relationship between class size and quality has not produced any significant statistics to support a relationship.

In concluding this chapter it is important to note that a variety of opinions exist on the use of the different indices of ability, effort, and quality, and the relationship between quality and cost, and quality and size. There is no absolutely perfect index or relationship. Anyone utilizing the measures or relationships discussed in this chapter must realize that imperfections exist, and must interpret any associated findings accordingly.

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## CHAPTER III

### SCHOOL DIVISION SETTINGS

The operations of four school divisions were analyzed and compared in this study. The main objective was the comparison of the operation of a non-unitary school division with the operations of three unitary school divisions.

A brief description of the school divisions may provide background information against which the findings of this study may be interpreted. However, as it is essential to keep the identity of the divisions anonymous, only a general background is provided.

#### I. SCHOOL DIVISION A

School Division A, a unitary school division, is located in an area serviced by several important all-weather highways, as well as by the Canadian Pacific and Canadian National Railways. Daily mail, bus, and transfer service is available. In addition, an air landing strip is located at the largest center in the division.

The primary economic activity in School Division A revolves about agriculture. Four communities act as service centers for the rural areas of the division. Of these communities, one main center economically dominates the other three. A number of the commercial outlets located in the communities are partially or wholly dependent upon the agricultural economic base for their existence and survival. A few secondary industries are located in some of the communities.

Table I indicates the values of the balanced assessments of real property located in this school division.

This unitary school division operates eleven elementary schools and three collegiates. At present there is a building program under way that will provide new facilities for a variety of educational programs at both the elementary and secondary levels. The staffing program, too, is one that seeks to provide the personnel essential to the development of programs with various objectives that will meet the needs of a variety of individuals.

## II. SCHOOL DIVISION B

This school division has operated as a unitary division since 1967. Located in an area where the soil is suitable for mixed farming, it is not surprising that this is the main economic activity of the residents. A few small secondary industries have located within the division in the last several years, providing some scope to the economic activities.

There are a number of communities that act as service centers for the rural population of the division, but no one center dominates as extensively as was the case in Division A. Business enterprises of the service centers in Division B are highly dependent upon the agricultural nature of the local economy. The success of these commercial activities varies directly with the success of local agriculture. Because of the diversified nature of mixed farming the economy is generally more stable than in areas of strict grain farming.

TABLE I  
BALANCED ASSESSMENTS

Year	Div. A	Div. B	Div. C.	Div. D
1967	\$-----	\$11,451,480	\$13,707,540	\$14,569,287
1968	25,624,910	11,699,290	14,543,390	14,685,426
1969	26,225,290	12,494,110	15,084,340	16,209,712
1970	27,440,370	13,754,410	15,690,830	16,540,812

For a comparison of balanced assessments see Table I.

School Division B has strong ethnic characteristics. Although elements of several different cultural groups are present, one group forms a large majority.

This school division operates eight elementary schools, one junior high school, and two collegiates. Since the time the division was established as a unitary one, the school board has phased out several of the high unit cost, low-enrolment schools. In addition, it is worthwhile to note that broad educational programs including occupational training have been implemented.

### III. SCHOOL DIVISION C

This unitary school division is located in an area serviced by several all-weather roads, as well as the Canadian Pacific and Canadian National Railways. The location is also such that certain areas are within commuting distance of Metropolitan Winnipeg. This has resulted in large increases in enrolment.

The main economic activity in this division again focusses on agriculture. Soil conditions, however, are such that they support grain farming in some areas, mixed farming in others, and stock-raising in still other areas. There are a number of small communities in this division, with the two largest centers acting as the chief service localities. The success of the economic enterprises in these communities is of course highly correlated with the success of local agriculture.

See Table I for a comparison of balanced assessments for real property from 1967 to 1970.

School Division C operates eleven elementary schools and four secondary schools, ranging in size from a one-room elementary school to an eighteen room collegiate.

#### IV. SCHOOL DIVISION D

This non-unitary school division is located in an area serviced by all-weather highways and the Canadian Pacific Railway. Daily mail, bus, and truck service to and from Winnipeg are available. The locale, however, is such that local residents do not have as much choice in radio and television reception as do residents of Winnipeg.

The main industry in School Division D is agricultural in nature. The soil is suitable to mixed farming as well as grain farming. The two largest communities act as the chief service centers, and a number of the commercial enterprises located in these centers are associated with or entirely dependent upon the agricultural economic base.

Table I depicts the values of the balanced assessments of the real property in this non-unitary division.

The population of this school division is relatively heterogeneous, with no one ethnic group forming a majority.

School Division D operates two secondary and nine elementary schools. Several of the component elementary school districts have implemented consolidation at their own initiative. This

apparently was an attempt to improve the efficiency of operation by reducing the number of low enrolment elementary classes. The smallest of the elementary schools is a rural one-room school which serves a Hutterite colony.

## CHAPTER IV

### ANALYSIS OF DATA

The objective of this study was to compare the financial operations of a non-unitary school division with three unitary school divisions, and to discern how the differing financial support systems affected the quality of education as indicated by certain surrogates of quality.

#### I. SOURCES OF DATA

The bulk of the data collected in this study was obtained from records on file at the Manitoba Department of Education. A small portion of the information was made available locally by the school divisions, while the remainder was obtained from the Municipal Assessment Branch.

##### Department of Education Data

Information collected at the Department of Education was obtained from the office of the Public Schools Finance Board and included the following items:

1. Enrolments
2. Expenditures
3. Grants
4. Number of teachers employed
5. Teacher qualifications
6. Teacher experience

Locally Obtained Data

Data obtained locally were collected from two sources, divisional board offices and schools.

1. Board offices:
  - a. real property revenues
  - b. secondary-elementary unit cost ratios
  - c. number of schools and classrooms in operation
  - d. salary schedules
  - e. programming
  - f. special personnel
2. Schools:
  - a. grade twelve enrolments
  - b. audio visual supplies

Municipal Assessment Branch Data

Figures on balanced assessments and their breakdown were obtained from the Municipal Assessment Branch. The records of assessment apparently are revised every five years under a plan implemented to accompany the formation of unitary school divisions. Prior to the formation of secondary school divisions reassessments were made every seven or eight years. Mr. W. L. Patson, an official of the assessment branch, expressed the opinion that the seven or eight year interval was too long. It permitted the current values of properties to fluctuate too much from the assessments on record.<sup>1</sup>

At present the procedure for determining the balanced assessments involves the equalizing of assessments on residential

and agricultural properties, and then adding the value of other properties such as industrial and commercial holdings. This sum is called the balanced assessment, and according to Mr. Patson it is approximately equal to the real property value in a school division.

## II. ANALYSIS OF FINANCIAL DATA

Three main factors affect the level of spending by a school division. These include the financial resources available, the number of children to be educated, and the degree to which local residents are willing to support educational spending over and above that required by the provincial government, in an attempt to purchase "improved quality" in education. Each of these aspects will be dealt with.

### Balanced Assessments

A comparison of the balanced assessments provides one with a method of comparing school divisions' wealth in absolute terms. Table II presents a comparison of the balanced assessments in the divisions concerned. The unitary divisions had both the highest and the lowest balanced assessments, while the non-unitary division displayed a balanced assessment of an intermediate value. However, the assessments of Division D were more similar to those of Divisions B and C than to those of Division A.

Balanced assessments increased throughout the period under discussion in every division. The average annual percentage increase in assessment ranged from 2.4 per cent to 5.0 per cent in

TABLE II  
COMPARISON OF BALANCED ASSESSMENTS

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$11,451,480	\$13,707,540	\$14,569,287
1968	25,624,910	11,699,290	14,543,290	14,685,426
1969	26,225,290	12,494,110	15,084,340	16,209,712
1970	27,440,370	13,754,410	15,690,830	16,540,812
Average Annual % Change	2.4	5.0	3.8	3.4

the unitary divisions. Division D, the non-unitary division, displayed a rate of increase of 3.4 per cent annually in its balanced assessment. This was just below the median.

### Burden

Assessments in themselves provide little information that might permit a valid comparison of financial ability. Wealth must be related to the burden before a relative comparison of ability can be made. Burden was previously defined as the educational job that has to be accomplished. In other words assessments must be related to the enrolment before any meaningful comparison of fiscal capacity can be made. Before making such a comparison it was necessary to analyze enrolment factors.

Total enrolments. Figures on total enrolments are presented in Table III. These figures represent the average enrolment for each fiscal year, and were obtained by summing the monthly enrolment of a division and then dividing by ten.

The largest enrolments were consistently found in the unitary divisions, while the smallest enrolments were found in the non-unitary division. From 1967 to 1970 the enrolment had increased rapidly in one unitary division, remained fairly stable in another, and decreased noticeably in the third unitary division. Division D, the multi-district division, with its relatively low enrolment experienced a slight decrease of 3.4 per cent from 1967 to 1970.

TABLE III  
TOTAL ENROLMENTS

Year	Div. A	Div. B	Div. C	Div. D
1967	-----	2,455	3,566	1,535
1968	2,323	2,196	3,781	1,527
1969	2,353	2,148	3,913	1,448
1970	2,332	2,083	4,028	1,482
Average Annual % Change	-.1	-3.8	3.2	-.8

Elementary enrolments. Table IV indicates that the ranking of elementary enrolments are the same as those of the total enrolments. Division A experienced a slow and steady decline of approximately four-tenths of one per cent annually at the elementary level, which was greater than the overall decline for that division. Division B also experienced a steady decline in its elementary student population. The annual decline of three per cent, however, was less than its overall annual decrease. Thus its secondary enrolment could be expected to show a higher rate of decrease. Division C experienced an increase of approximately 1.6 per cent per annum at the elementary level. This was approximately half the annual rate of increase for the overall enrolment in Division C. Consequently the secondary

enrolment will have been increasing at a higher rate. Division D, the non-unitary division, had a slight annual decrease in the elementary enrolment. This decrease was larger than the overall annual decrease, predicting future declines in the secondary enrolment.

TABLE IV  
ELEMENTARY ENROLMENTS

Year	Div. A	Div. B	Div. C	Div. D
1967	-----	1,708	2,789	1,073
1968	1,675	1,599	2,857	1,044
1969	1,672	1,525	2,874	941
1970	1,653	1,502	2,961	979
Average Annual % Change	-.4	-3.0	1.6	-2.2

Secondary enrolments. Enrolment figures for the secondary level are shown in Table V. As suggested in the previous subsection, the secondary enrolments in Divisions A and D have been increasing despite the fact that the overall enrolments decreased slightly. The increase will probably diminish in a few years, for the elementary enrolments were decreasing. The growth in the secondary enrolment in Division C was relatively high, 9.4 per cent, in comparison to its annual elementary growth rate of

1.6 per cent. In all three divisions experiencing an increase in enrolment at the secondary level the growth rate appeared to level off in 1969 and 1970.

TABLE V  
SECONDARY ENROLMENTS

Year	Div. A	Div. B	Div. C	Div. D
1967	---	747	777	462
1968	648	597	924	487
1969	681	623	1,039	507
1970	679	581	1,067	503
Average Annual % Change	1.6	-5.6	9.4	2.2

Division B was the only division with a decrease in enrolment at the secondary level. The annual decrease of 5.6 per cent was noticeably higher than the three per cent rate of decline at the elementary level. One might surmise that the total enrolment in this division may level off in the next few years.

Weighted secondary enrolments. More valid comparisons of burden may be made if weighted secondary enrolments are used. It was indicated in the review of the literature that the cost

of educating a secondary student was approximately 1.3 to 1.6 times that of educating an elementary pupil. In this study an index of 1.3 was used, based upon information obtained from the Winnipeg School Division No. 1.<sup>2</sup> Weighted secondary enrolment figures are presented in Table VI.

TABLE VI  
WEIGHTED SECONDARY ENROLMENTS

Year	Div. A	Div. B	Div. C	Div. D
1967	---	971	1,010	614
1968	862	776	1,200	648
1969	905	810	1,350	675
1970	902	755	1,386	669
Average Annual % Change	1.5	-5.6	9.4	2.5

It will be noted that the weighted enrolment figures are slightly higher than those of Table V. The general rank pattern, however, was not altered, although the annual average percentage increase was affected slightly in Divisions A and D.

Total weighted enrolments. The elementary enrolments of Table IV were combined with the weighted secondary enrolments of Table VI to obtain figures of actual burden so that a valid

comparison of the burden could be made. This total weighted pupil count is presented in Table VII.

TABLE VII  
TOTAL WEIGHTED ENROLMENTS

Year	Div. A	Div. B	Div. C	Div. D
1967	-----	2,679	3,799	1,687
1968	2,537	2,375	4,057	1,692
1969	2,577	2,335	4,224	1,616
1970	2,555	2,257	4,347	1,648
Average Annual % Change	.2	-3.9	3.8	-.8

The data indicate that residents of Division A were actually supporting a higher educational burden in 1970 than in 1968, contrary to the conclusion which may have been drawn from the figures in Table III. The increase in burden was mainly due to the increase in the secondary enrolment. The average annual percentage change remained relatively constant for Divisions B and D, and was six-tenths of one per cent greater than indicated by Table III for Division C.

The rank order pattern was the same for weighted pupil units as for actual total enrolments.

### Financial Ability

Having analyzed the data on burden and wealth it was then possible to compute indices of financial ability. This term was defined as the ratio of the balanced assessment to the burden. Since weighted enrolment is a more valid measure of burden than actual enrolment, balanced assessments were divided by weighted enrolment figures to arrive at indices of fiscal ability.

Table VIII presents a comparison of fiscal abilities. Financial ability was observed to increase in all divisions except Division C. Fiscal ability in this division fluctuated slightly but experienced no increase. This relatively stable ability may be explained by the increases in enrolment which accompanied the increases in balanced assessment.

Division A experienced an increase of 2.1 per cent annually in its fiscal ability. This increase in ability was due mainly to the increase in assessment. Division B experienced a relatively large growth in ability, in excess of ten per cent annually. This increase may be attributed to two factors: the relatively large decrease in enrolment of almost four per cent annually, and an increase of five per cent annually in the balanced assessment. Division D, the multi-district division, experienced a moderate increase of four per cent annually in its ability. This increase was chiefly the result of increases in balanced assessment, for the enrolment experienced only a slight change from 1967 to 1970.

TABLE VIII  
FINANCIAL ABILITY: BALANCED ASSESSMENT  
PER WEIGHTED PUPIL

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$ 4,280	\$ 3,610	\$ 8,630
1968	10,120	4,930	3,560	8,670
1969	10,260	5,340	3,570	10,020
1970	10,760	6,110	3,610	10,020
Average Annual % Change	2.1	10.7	0.0	4.0

A striking feature of the relative abilities was the wide range that persisted. Division D, the multi-district division, was second in ability to only one unitary division, Division A. These two divisions displayed financial abilities that were two to three times those of Divisions B and C. It may be recalled from the table of balanced assessments that the assessment of Division D was similar to that of Divisions B and C, yet the abilities varied widely.

#### Expenditures

Financial expenditures incurred by the divisions were next analyzed. This was carried out in two parts, current expenditures, and operational expenditures. Operational expenditures

were defined in the introductory chapter as the expenditures incurred for administration, instructional services, maintenance, transportation, and miscellaneous items. Current expenditures were defined as operational expenditures plus additional expenditures such as debt service, and capital expenditure items not included in the capital budget.

Current expenditures. Figures of current expenditures are given in Table IX. The unitary divisions indicated higher current expenditures at all times. This of course was not unexpected, for the multi-district division had the smallest enrolments.

Educational expenditures were observed to increase in all divisions. Division C with its high rate of increase in enrolment experienced the highest annual rate of increase in current expenditures. The lowest rate of increase was also found in a unitary division. The multi-district division, Division D, had an annual rate of increase that was slightly below the median.

TABLE IX  
ANNUAL CURRENT EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$1,278,335	\$2,287,574	\$ 783,965
1968	1,383,073	1,365,997	2,404,820	864,399
1969	1,460,972	1,372,609	2,521,977	904,173
1970	1,534,876	1,498,363	2,812,464	1,001,368
Average Annual % Change	3.0	4.3	5.7	3.9

Teachers employed. Figures on expenditures may be compared in a more meaningful way when related to some other factors which affect the level of expenditure. One such method of comparison is to calculate ratios of expenditures to the number of teachers on staff, or the number of authorized teachers on staff. Before this could be done however, it was necessary to compare staff sizes as well as the number of authorized teachers on staff in each division. This information is shown in Tables X and XI.

TABLE X  
TEACHERS EMPLOYED

Year	Div. A	Div. B	Div. C	Div. D
1967	---	122	182	66
1968	109	109	195	70
1969	112	107	191	70
1970	113	107	200	70
Average Annual % Change	1.2	-3.1	2.5	1.5

TABLE XI  
AUTHORIZED TEACHERS EMPLOYED

Year	Div. A	Div. B	Div. C	Div. D
1967	---	104	160	58
1968	104	97	172	59
1969	107	97	185	57
1970	107	95	190	57
Average Annual % Change	.7	-2.3	4.7	-.4

The largest staffs were of course found in the divisions with the highest enrolments, namely the unitary divisions. The non-unitary division, Division D, had less than 75 per cent of the staff of the smallest unitary division, while the largest unitary division staff size was three times as great as that of the multi-district division. This was confirmed in both tables. It is interesting to note that the staff size in Division D remained constant from 1968 to 1970 despite the fact that the enrolment decreased.

Current expenditures per teacher. Having determined the divisional staff sizes, it was then possible to determine the current expenditures per teacher. This data is presented in Table XII.

The highest current expenditure per teacher was generally displayed by the unitary divisions. Despite this, Division D, the multi-district division, did not always rank last. To the contrary, it ranked first in 1970, second in 1967, third in 1969, and was tied for third place in 1968.

The difference in per teacher expenditure between first and last place was greatly reduced over the four year interval. In 1967 the difference was \$2,500 per teacher. By 1970 this difference had decreased to \$710 per teacher. This was due mainly to the comparatively high rate of increase in the current expenditure per teacher observed in Division B.

TABLE XII  
CURRENT EXPENDITURES PER TEACHER

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$10,060	\$12,560	\$12,370
1968	12,690	12,520	12,340	12,340
1969	13,040	12,810	13,200	12,900
1970	13,580	13,990	14,060	14,290
Average Annual % Change	2.3	9.8	3.0	2.4

Current expenditures per authorized teacher. An analysis of the current expenditures per authorized teacher was also made. This data is presented in Table XIII. For purposes of comparison the information of this table is probably more valid than that of Table XII, for grants are made according to the number of authorized teachers on staff.

The current expenditure per authorized teacher was of course greater than the expenditure per teacher. Division D, the multi-district division, was observed to have the highest current expenditure per authorized teacher at all times. Yet, it may be recalled from the introductory chapter that the non-unitary division received smaller grants per authorized teacher.

TABLE XIII  
CURRENT EXPENDITURES PER AUTHORIZED TEACHER

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$12,280	\$13,690	\$14,920
1968	13,600	14,080	13,990	14,640
1969	13,640	14,140	13,620	14,850
1970	14,320	15,760	14,780	17,560
Average Annual % Change	1.8	7.1	2.0	1.8

Operational expenditures. Some writers suggest that operational expenditures (or net current expenditures) are more meaningful than current expenditures in disclosing the educational characteristics of a school division. Consequently operational expenditures were analyzed as well. This data is presented in Table XIV.

The operational expenditures were of course smaller than the current expenditures, and the ranking pattern duplicated the order found in the current expenditures. The increases in operational expenditures were observed to be relatively high, particularly in Divisions C and D. The annual rate of increase was highest in a unitary division, Division C, and was closely followed by Division D.

TABLE XIV  
OPERATIONAL EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$1,071,393	\$1,643,116	\$ 662,702
1968	1,251,191	1,217,639	2,084,183	751,233
1969	1,339,356	1,210,348	2,205,291	818,838
1970	1,419,134	1,266,494	2,392,780	905,169
Average Annual % Change	4.5	4.6	11.4	9.2

Operational expenditures per teacher. The data on operational expenditures as indicated in Table XIV display absolute values only. It was previously suggested that a more realistic comparison of expenditures could be made if staff size was considered. Data on the ratio of operational expenditures to staff size is shown in Table XV.

A unitary division displayed the highest operational expenditure per teacher on two occasions, and the multi-district division held this rank on the other two occasions. Division D placed second and third in the two remaining years. Thus its operational expenditure per teacher could be considered to be one of the highest.

It was also noted that the annual percentage increases in operational expenditures per teacher were more than twice the rates of increase in current expenditure per teacher in Divisions C and D. It would appear that emphasis in expenditures was being placed upon the operational aspect, reflecting a "tight money" situation in these two divisions. This of course was not unexpected in view of the increasing enrolment in Division C. In Division D the comparatively high rate of increase was probably due to the support system under which it operated.

TABLE XV  
OPERATIONAL EXPENDITURES PER TEACHER

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$ 8,780	\$ 9,030	\$10,040
1968	11,490	11,150	10,690	10,730
1969	11,940	11,610	11,540	11,690
1970	12,550	11,820	11,960	12,930
Average Annual % Change	3.1	8.7	8.1	7.2

An interesting point to note was that the range in the operational expenditure per teacher was reduced very little between 1967 and 1970. However, the range in the current expenditure per teacher had been reduced from \$2,500 to \$480.

Operational expenditures per authorized teacher. Figures on operational expenditures per authorized teacher are given in Table XVI. Several changes in the rank order occurred when authorized teachers were considered in place of actual number of teachers on staff. Division D, the non-unitary division, ranked first on all occasions. As in the current expenditures per authorized teacher the difference between the unitary and non-unitary divisions was rather marked. The unitary divisions generally displayed a significantly lower operational expenditure per authorized teacher.

The differences between the lowest and the highest expenditures per authorized teacher increased from \$1,130 to \$3,290 between 1967 and 1970. The difference between first and second rank also increased during this interval from \$1,110 per authorized teacher to \$2,560 per authorized teacher. This would appear to contradict the observation that the differences were decreasing as indicated in Table XV. The relative increases in the range of operational expenditures per authorized teacher are reflected in the different annual rates of increase. Top ranking Division D, the non-unitary division, exceeded the nearest unitary division by 2.5 per cent in the rate of increase. Division D displayed an annual rate of increase of 9.8 per cent, despite the fact that the

number of authorized teachers was decreasing at four-tenths of one per cent. Division B's rate of increase in operational expenditures per authorized teacher was 7.3 per cent, while its number of authorized teachers was decreasing at 2.3 per cent annually. Divisions C and A displayed increases in operational expenditures per authorized teacher of 5.6 and 3.3 per cent respectively, while the numbers of authorized teachers were annually increasing at 4.7 and .7 per cent respectively.

TABLE XVI  
OPERATIONAL EXPENDITURES PER AUTHORIZED TEACHER

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$10,300	\$10,280	\$11,410
1968	12,030	12,540	12,120	12,720
1969	12,510	12,490	11,920	14,360
1970	13,250	13,320	12,590	15,880
Average Annual % Change	3.3	7.3	5.6	9.8

#### Revenues

The sources of income for school divisions are limited to two major sources. These are government grants, and taxes levied on real property. Tuition fees and sales of properties provide some additional funds, but such income forms a very minor portion of the total revenue.

Provincial education grants. Provincial grants form the larger of the two major sources of revenue in the unitary divisions as will be seen later. The amounts made available to school divisions for current, and for operational expenditures are set forth in Tables XVII and XVIII. It should be noted, however, that capital grants may also have been made. These were not included in this study.

TABLE XVII  
PROVINCIAL GRANTS FOR CURRENT EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$1,114,102	\$2,008,858	\$ 387,468
1968	1,178,280	1,072,449	1,908,453	391,382
1969	1,226,056	1,085,186	2,033,379	401,272
1970	1,263,743	1,186,717	2,280,594	432,713
Average Annual % Change	2.4	1.6	3.4	2.9

TABLE XVIII  
PROVINCIAL GRANTS FOR OPERATIONAL EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$ 840,197	\$1,165,980	\$ 351,548
1968	938,763	833,557	1,455,220	361,358
1969	992,575	825,228	1,575,867	378,586
1970	1,018,988	852,464	1,593,606	388,227
Average Annual % Change	2.8	.4	9.4	2.6

The largest operational grants as well as the largest current grants were made to the divisions with the largest enrolments, namely the unitary divisions. The smallest grants were made to Division D, which had the lowest enrolments, and which was operating under a support system other than the foundation program.

Over the four year period the grants were observed to increase in all divisions, despite the decreases in enrolments observed in some divisions. Although the grants were increasing, a comparison with Tables IX and XIV revealed that the rate of increase was not commensurate with the rate of increase in actual expenditures in any of the divisions. This discrepancy appeared rather obvious in the multi-district division when the rate of increase of operational expenditures was compared to the rate of

increase in grants for operational expenditures.

Local real property revenues. To supplement grants from the foundation fund all divisions levy local educational real property taxes. In unitary divisions this revenue is referred to as the special levy. It supplies funds for aspects of the educational program not covered by provincial grants. In multi-district divisions the supplementary educational revenue derived from real property taxes consists of two portions, a special levy as in unitary divisions, and a general levy. This general levy is determined according to the number of authorized teachers for which the multi-district division qualifies and the expenditures approved by the Finance Board.

The amounts of the special education levies generated from real property are listed in Table XIX. Division D, the non-unitary division, generated the largest special levies during three of the four years under consideration. Only once did a unitary division exceed the amount of the special revenue generated by Division D. The special revenues did not appear to duplicate the rank order of the balanced assessments, nor the rank order of the fiscal abilities.

Special levy revenues were observed to increase extensively from 1967 to 1970 in the unitary as well as the non-unitary divisions. These increases did not appear to reflect the changes in enrolment, except in Division C. The average annual rates of increase in the special levies appeared much higher than the rates of increase in fiscal abilities. This reflects the

discrepancies between the rates of increase in educational expenditures and the rates of increase in grants, and suggests that a greater proportion of the cost of education is being paid by the real property owner, despite increased grants.

TABLE XIX  
SPECIAL LEVY REVENUE

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$ 57,000	\$150,000	\$309,551
1968	207,954	140,400	254,000	365,052
1969	225,640	200,000	448,043	469,744
1970	274,700	306,640	525,570	483,710
Average Annual % Change	10.7	109.2	62.5	14.1

It was previously noted that non-unitary divisions, in addition to the special levy, administered a general levy. Unitary divisions generate another type of educational real property tax as well, called the foundation levy. Every unitary division is required to generate an amount from this levy which is in direct proportion to its balanced assessment. This foundation levy revenue is not, however, retained by the unitary divisions, whereas the multi-district division does retain the general levy produced. Unitary divisions are required to forward the revenue

from the foundation levy to the provincial foundation fund from which grants are made.

Table XX compares the amounts of real property revenues that were generated by the foundation levies in the unitary divisions with the general levies produced in the non-unitary division. In the unitary divisions the amounts of course reflect the size of the balanced assessments. This was not necessarily the case for Division D, although the revenues generated may suggest this when compared to Divisions B and C.

TABLE XX  
COMPARISON OF FOUNDATION AND GENERAL LEVY REVENUES

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$137,233	\$172,534	\$173,939
1968	388,117	186,057	241,872	184,976
1969	338,697	168,587	214,779	214,653
1970	332,252	172,000	213,581	226,703
Average Annual % Change	4.8	6.3	5.8	7.6

It was interesting to note that in the unitary divisions the contributions to the foundation fund were increasing at a higher rate than the rate of increase in grants. This would appear to suggest that the proportion of educational costs being paid

for by the real property owners was growing more rapidly in the non-unitary division, than in the unitary divisions.

The contributions toward the foundation fund made by the unitary divisions formed a relatively small portion of the total fund. The greater portion of the fund was derived from the provincial treasury, which in turn derived its revenues from a variety of other taxes. In 1967 foundation levies provided approximately forty per cent of the revenues for the foundation fund, and in 1968 this percentage was reduced to thirty-five per cent. In 1969 this percentage was further reduced to thirty per cent.<sup>3</sup> At present there is a move to reduce the proportion of the contribution to the fund from foundation levies to twenty-five per cent.<sup>4</sup>

The foundation program thus appears to have served two purposes. It has transferred part of the cost of education to taxes other than real property in the unitary divisions, and it has also provided increased grants to unitary divisions.

Total educational real property taxes. In order that a full comparison could be made of the real property taxes generated for education, the special levies were combined with the foundation levies in each unitary division, and in the multi-district division the special levy was combined with the general levy. These figures of the total educational real property revenue generated are presented in Table XXI.

Division D, the non-unitary division raised the largest real property revenue for educational purposes on two occasions.

On one occasion Division C exceeded the amount raised by Division D by 4.2 per cent, and on another occasion Division A exceeded Division D by 8.4 per cent. It can be recalled, however, that Division D did not possess the highest balanced assessments. To the contrary, the balanced assessments of Division D were near the median.

TABLE XXI  
TOTAL EDUCATIONAL REAL PROPERTY TAXES

Year	Div. A	Div. B	Div. C	Div. D
1967	\$-----	\$194,233	\$322,534	\$483,490
1968	596,071	326,457	495,872	550,028
1969	564,337	368,587	662,822	684,397
1970	606,952	478,646	739,151	710,413
Average Annual % Change	.6	36.6	32.3	11.7

The high rates of increase in real property revenue for education have previously been referred to. When the percentage increases in locally generated revenues are compared to the increases in the provincial grants it once again becomes apparent that the grants have not kept pace with the increases in educational costs, except in Division A. In Divisions B, C, and D it is thus obvious that an ever-increasing proportion of the educational costs was borne by the real property owner.

Expenditure-Revenue Ratios

The ratio of total real property revenue generated for educational purposes in comparison to expenditures indicates the proportion of educational expenditures that could have been paid for by local real property revenue. This information is presented in Tables XXII and XXIII.

It was observed that a significantly greater proportion of the educational expenditures in the non-unitary division, Division D, appeared to have been paid for by local property taxes than in the unitary divisions. This applied to both the current as well as the operational expenditures category. As much as seventy-three to eighty-four per cent of the operational cost of education, or fifty-six to seventy-six per cent of the current cost of education, could have been paid for by real property taxes in Division D. In a number of cases this was three or four times the proportion that the unitary divisions contributed toward the cost of education. Yet the financial ability of Division D was not three or four times as great as that of the unitary divisions. Furthermore, the balanced assessment of Division D was rather like that of Divisions B and C. The figures of Tables XXII and XXIII indicate rather succinctly the less favorable support system under which the non-unitary division operated.

A noteworthy observation is the increase in the proportion of education paid for by local real property taxes, in spite of larger grants and a shift in the incidence of educational taxes. The maximum difference in the percentage of education paid for by

local real property taxes between unitary and non-unitary divisions was not altered much between 1967 and 1970.

TABLE XXII

TOTAL EDUCATIONAL REAL PROPERTY TAXES EXPRESSED AS A  
PERCENTAGE OF CURRENT EDUCATIONAL EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	----%	15.2%	14.1%	55.9%
1968	43.1	23.9	20.6	63.8
1969	38.5	26.8	26.2	75.6
1970	39.5	31.9	26.3	71.1

TABLE XXIII

TOTAL EDUCATIONAL REAL PROPERTY TAXES EXPRESSED AS A  
PERCENTAGE OF OPERATIONAL EDUCATION EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	----%	18.1%	19.6%	73.0%
1968	47.6	26.8	23.8	73.2
1969	42.1	30.1	30.0	83.6
1970	42.7	37.8	30.8	78.4

### Educational Effort

Educational effort was defined as the degree to which a division was financially supporting its educational system. A number of measures of effort were discussed in the review of the literature, including expenditure-assessment ratios, mill rates, per pupil revenues, and the ratio of the per pupil revenue to ability.

Expenditure-assessment ratios were not considered a valid measure of effort because the percentage of educational expenditures paid for by local taxes were found to vary widely. The mill rate as a measure of effort was considered invalid because the fiscal abilities were not the same in all divisions, and because the burden would not be considered in this measure. The real property revenue per pupil as a measure of effort too was considered inadequate on the basis that it did not consider the fiscal ability. The measure of effort that appeared to best compare educational effort was the ratio of the educational real property revenue to balanced assessment. The values of this ratio are presented in Table XXIV.

TABLE XXIV  
EDUCATIONAL EFFORT

Year	Div. A	Div. B	Div. C	Div. D
1967	---%	1.7%	2.3%	3.3%
1968	2.3	2.8	3.4	3.8
1969	2.1	3.0	4.4	4.2
1970	2.2	3.5	4.7	4.3

The indices of effort indicated that the non-unitary division had the highest level of effort during two years, and ranked second in the remaining two years. In one of these years Division D was exceeded by only one-fifth of one per cent, and on the other occasion Division D was exceeded by two-fifths of one per cent. The unitary division which had exceeded Division D, probably displayed the high level of effort because of the high rate of increase in enrolment. In Division D the high level of effort can probably be attributed to the support system under which it operated.

It was also observed that the levels of effort tended to rise over the four year period considered. Only in Division A did the level of effort appear to remain comparatively constant. The wide range in the levels of effort displayed was a striking feature. In 1969 and 1970 the two highest levels of effort were twice those of the lowest level of effort.

### III. ANALYSIS OF SURROGATES OF QUALITY

In part two of this chapter the financial operations of three unitary and one non-unitary school divisions were analyzed. The object of this study was also to analyze a number of surrogates of quality, factors which might indicate the quality of education provided in the school divisions concerned. These predictors of quality included student retention, student-teacher ratios, teacher qualifications, teacher experience, salary levels, breakdown of operational expenditures, audio visual supplies, and several supplementary factors.

#### Student Retention Rates

Student retention rates were calculated by two procedures. These included the ratio of secondary enrolments to elementary enrolments, and the ratio of grade twelve enrolments to secondary enrolments. This data is listed in Tables XXV and XXVI.

TABLE XXV

#### RETENTION RATES: SECONDARY-ELEMENTARY

#### ENROLMENT RATIOS

Year	Div. A	Div. B	Div. C	Div. D
1967	----	.438	.281	.431
1968	.386	.373	.324	.467
1969	.407	.408	.362	.538
1970	.410	.387	.360	.514

TABLE XXVI  
RETENTION RATES: GRADE TWELVE-SECONDARY  
ENROLMENT RATIOS

Year	Div. A	Div. B	Div. C	Div. D
1967	----	.134	.187	.167
1968	.209	.171	.191	.248
1969	.205	.180	.190	.233
1970	.241	.191	.151	.203

Division D, the non-unitary division, ranked first in three of the four years on the secondary-elementary ratio, while a unitary division ranked first on the other occasion on this index. The difference during that year was very slight between this unitary division and Division D. On the ratio of grade twelve enrolments to secondary enrolments unitary divisions ranked first on two occasions, while Division D ranked first on two occasions as well. It thus appeared that the multi-district division generally ranked quite high in this surrogate of quality.

Attention must be drawn to the fact that the figures of retention as calculated, are probably most valid for divisions with relatively stable enrolments. According to Table III this would apply particularly to Divisions A and D. Division C experienced a relatively high increase in enrolment, especially

at the secondary level, which would probably have affected its indices of retention. The ranking of Division B must be interpreted similarly, with regard to the decrease in enrolment this division experienced.

### Student-Teacher Ratios

As an indicator of quality the student-teacher ratio is not a settled issue. No one has yet shown that a particular enrolment is the optimum class size. An ideal class size might well be a one to one student-teacher ratio. This situation, however, is far removed from reality. At best it might be said that class sizes should vary realistically, according to the activity planned.

Student-teacher ratios, however, may still be calculated for comparison purposes, with the underlying assumption that a lower student-teacher ratio permits greater individual attention which in turn encourages improved quality in education. Tables XXVII and XXVIII indicate the elementary, and the secondary student-teacher ratios.

At the elementary level first rank in the student-teacher ratio was held by a unitary division on every occasion. At no time was Division D near the top rank. To the contrary, Division D placed last on each occasion. The difference between first and last place was relatively large in 1967. However, it was reduced in the following years.

TABLE XXVII  
ELEMENTARY STUDENT-TEACHER RATIOS

Year	Div. A	Div. B	Div. C	Div. D
1967	----	19.6	21.3	26.8
1968	23.3	21.3	22.1	25.4
1969	22.6	20.3	22.2	24.1
1970	21.8	23.4	22.6	24.4

At the secondary level first place was again held by unitary divisions on all occasions. However, the non-unitary division ranked second three times and third on the remaining occasion. It thus held a position just above the median at the secondary level in the student-teacher ratio.

TABLE XXVIII  
SECONDARY STUDENT-TEACHER RATIOS

Year	Div. A	Div. B	Div. C	Div. D
1967	----	21.3	15.2	17.8
1968	17.5	17.5	14.0	16.8
1969	17.9	19.4	16.0	16.4
1970	18.3	13.5	15.5	16.8

In order that a full comparison of the student-teacher ratios at both the elementary and secondary levels could be made, the actual (total) student-teacher ratios were calculated. This data is presented in Table XXIX, and shows that the lowest actual student-teacher ratios were found in the unitary divisions at all times. The non-unitary division generally held a last place position. Attention is drawn to the fact that the differences after 1967 were comparatively small, thus making it difficult to attach much significance to the ranking.

TABLE XXIX  
TOTAL STUDENT-TEACHER RATIOS

Year	Div. A	Div. B	Div. C	Div. D
1967	----	20.1	19.6	23.3
1968	21.3	20.0	19.4	21.8
1969	21.0	20.1	20.4	20.7
1970	20.6	19.5	20.1	21.2

#### Super-numerary Staff

The percentage of staff that is in excess of the number of authorized teachers was termed super-numerary staff. This percentage is analyzed in Table XXX.

The percentage of staff over grant was found to vary widely. The highest percentage of super-numerary staff was found in Division D, the multi-district division, in three of

the four years under consideration. Only in 1967 did a unitary division exceed the proportion of teachers over grant in Division D. In the unitary divisions the percentage of super-numerary teachers was observed to remain fairly constant, or to decrease. In Division D the percentage of super-numerary teachers increased rather noticeably from 13.3 per cent to 18.6 per cent of the total staff.

TABLE XXX  
SUPER-NUMERARY STAFF EXPRESSED AS A  
PERCENTAGE OF TOTAL STAFF

Year	Div. A	Div. B	Div. C	Div. D
1967	---%	14.7%	12.9%	13.3%
1968	4.6	11.0	11.8	15.7
1969	4.5	9.3	3.2	18.6
1970	5.3	11.2	5.0	18.6

#### Teacher Qualifications

The number of years of training possessed by teachers is recognized as a chief factor of educational quality by many writers in the field, as indicated in the review of the literature. High academic training does not of course guarantee high quality education, but the probability of providing quality education is greater for a highly trained teacher than for one with the minimum academic requirements.

Distribution of teachers by qualifications. Table XXXI

indicates the percentage distribution of teachers in each category of training beyond high school. The largest proportion of teachers with no training beyond high school was found in the unitary divisions in 1967, 1968, and 1969. During 1967 and 1968 the lowest percentage of such untrained teachers prevailed in Division D, the multi-district division. In 1969 Division D held a third rank position, while in 1970 it was the only division to staff teachers with no training beyond high school.

All divisions, both unitary and non-unitary, in 1967 had at least fifty per cent of its teaching staff composed of teachers with one year of training or less. In 1968 only one unitary division had raised the median level of training of its staff to two years beyond high school. By 1969 all divisions, non-unitary as well as unitary, had achieved this median category, and maintained it in 1970.

The highest percentage of teachers with a general degree and one year of teacher training (total of four years) was found in Division D in 1967. In 1968 a unitary division held this rank, while Division D, the multi-district division held second rank. In 1969 Division D was tied with a unitary division for first place in this category of teachers. In 1970 Division D again ranked second. It would thus appear that the non-unitary division was comparatively well staffed with teachers having four years of training. It was also noted that there was a rising trend in the proportion of such teachers being staffed in most divisions.

TABLE XXXI

## PERCENTAGE BREAKDOWN OF TEACHER QUALIFICATIONS\*

Year	1967				1968				1969				1970			
Division	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Years of Training																
0		9.1	4.9	3.1	.9	7.4	3.6	0.0	.9	1.9	.6	1.3	0.0	0.0	0.0	4.3
1		45.1	44.5	59.2	55.0	44.0	40.5	52.8	48.2	42.0	40.2	48.6	47.8	34.7	37.0	37.2
2		19.8	16.0	9.1	11.9	21.1	15.4	11.4	11.6	22.4	14.6	8.7	8.8	16.8	13.5	14.3
3		6.1	12.1	10.2	7.4	9.2	10.8	14.3	7.2	15.9	9.4	14.3	8.0	12.0	12.0	10.0
4		12.4	13.7	15.3	12.9	11.9	19.5	17.2	19.6	11.2	21.4	21.4	20.4	14.0	22.5	21.4
5		5.8	7.7	3.1	11.0	4.6	9.7	4.3	11.6	4.7	12.6	5.7	13.2	16.8	13.5	12.8
6		1.7	1.1	0.0	.9	1.8	.5	0.0	.9	1.9	.6	0.0	1.8	5.7	1.0	0.0
7		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6	0.0	0.0	0.0	.5	0.0

\*Number of years of training beyond high school.

When the total percentage of teachers with training beyond four years was considered, it was observed that the unitary divisions ranked first at all times, with Division D ranking last. In fact, Division D only had entries in this category for teachers with five years of training.

Average-weighted teacher qualifications. In order to arrive at an overall index by which comparisons of teacher qualifications among the divisions may be made, it was necessary to set up a relative weighting scale for the number of years of training. Teachers with no training beyond high school were assigned a weight of one, while teachers with one or two years of training beyond high school were assigned a weight of two. Those teachers who had three or four years of training received a weight of three, and teachers with five or six years of training were assigned a weight of four. If teachers had more than six years of training they were given a weight of five.

The number of teachers in each category was multiplied by the weight of that category, and the products of the categories were then summed for each division. This sum was next divided by the number of staff members in the division, and yielded an average weighted index of teacher qualification. These indices are shown in Table XXXII.

The highest average weighted index of qualifications was found in the unitary divisions at all times. Division D, the multi-district division, generally held a position near the median, except for 1970 when it placed fourth. The indices also

show that the average weighted qualifications rose steadily throughout the period under consideration. Furthermore, it was noted that the differences between the first and last place division in average weighted qualifications were increasing.

TABLE XXXII  
AVERAGE WEIGHTED TEACHER QUALIFICATIONS

Year	Div. A	Div. B	Div. C	Div. D
1967	----	2.24	2.38	2.29
1968	2.43	2.26	2.47	2.40
1969	2.51	2.38	2.79	2.46
1970	2.58	2.71	2.65	2.53

#### Teacher Experience

Not everyone would agree that experienced teachers generate a "better quality" education than inexperienced teachers. A number of educators do, however, accept this premise, as shown in the review of the literature. Salary levels in many areas would also appear to reflect an association between the quality of education and the experience of the staff in a division, for the more experienced teachers generally receive higher salaries than similarly qualified, inexperienced teachers.

Distribution of teachers by experience category. Table XXXVIII presents a breakdown of the experience of teachers in each division. The highest percentage of inexperienced teachers was most frequently found in the unitary divisions. However, the unitary divisions also staffed the lowest percentage of inexperienced teachers. Division D, the non-unitary division, generally staffed an intermediate percentage of inexperienced teachers.

In the one-year category of experience the non-unitary division tended to staff the highest percentage, and in the two-year category of experience it held an intermediate position. Division D held the same intermediate rank in the three to five year category of experience, and displayed the highest proportion of the staff in the six to ten year range of experience. In the maximum experience range the unitary divisions ranked first. Division D displayed the lowest proportion of staff in this category during 1967 and 1968, and held an intermediate position in 1969 and 1970.

From a median point of view it would appear that the multi-district division did not staff teachers with lesser experience to any greater degree than did the unitary divisions. The median experience category for Division D was generally not lower, nor higher, than those of the unitary divisions.

TABLE XXXIII  
 PERCENTAGE BREAKDOWN OF TEACHING EXPERIENCE  
 1967

Years of Experience	0	1	2	3-5	6-10	More than 10
Division						
A	----%	----%	----%	----%	----%	----%
B	23.7	9.8	8.4	9.0	18.8	30.3
C	26.9	8.3	4.9	18.1	17.6	24.2
D	24.2	9.1	6.1	12.1	27.3	21.2

1968

A	16.5	9.2	4.6	13.8	16.5	39.4
B	22.0	8.3	10.1	15.6	21.1	22.9
C	22.2	14.8	6.7	15.9	17.4	23.0
D	21.4	21.4	5.7	12.9	20.0	18.6

TABLE XXXIII

(continued)

1969

Years of Experience	0	1	2	3-5	6-10	More than 10
Division						
A	20.5%	4.5%	8.9%	14.3%	17.0%	34.8%
B	27.1	7.5	7.5	23.4	12.1	22.4
C	27.2	12.6	11.5	12.6	16.2	19.9
D	12.9	17.1	11.4	14.3	24.3	20.0

1970

A	8.9	13.3	6.2	19.4	18.6	33.6
B	19.6	12.2	5.6	23.4	16.8	22.4
C	16.0	13.5	14.5	13.5	21.5	21.0
D	22.8	14.3	5.7	11.4	18.6	27.2

Average weighted teaching experience. To make a direct comparison of teachers' experience among the divisions it was necessary to calculate an average weighted index of experience. This was done in a manner similar to that of the training of teachers. Each category of experience was assigned a weight factor: teachers with no experience were given a weight of one, teachers with one or two years of experience were assigned a weight of two, teachers with three to five years of experience were assigned a weight of three, while teachers with six to ten years of experience were given a weight of four. Those teachers who had more than ten years of experience were assigned a weight of five.

The number of teachers in each experience category was multiplied by the appropriate weight factor in each division. The products were next summed for each division, and then divided by the number of teachers on staff in each division. These quotients yielded weighted indices of average teaching experience which are presented in Table XXXIV.

TABLE XXXIV  
AVERAGE WEIGHTED TEACHING EXPERIENCE

Year	Div. A	Div. B	Div. C	Div. D
1967	----	3.13	2.98	3.06
1968	3.49	3.05	2.97	2.87
1969	3.32	2.88	2.77	3.10
1970	3.48	3.05	3.03	3.08

It was observed that the indices fluctuated during the four year interval. However, no distinct rising trend could be discerned. The highest index of average weighted experience was found in the unitary divisions at all times. The non-unitary division tended to rank slightly above the median, placing second on three occasions and fourth on the other. The information obtained from Table XXXIV thus supports the conclusion of Table XXXIII. Division D, the non-unitary division, did not appear to staff teachers with less experience to a greater degree than the unitary divisions.

#### Salary Level Comparisons

It has been suggested by some writers in the field that the best single predictor of the quality of education in a school division is the salary level of the teaching staff. Whether or not this claim can be substantiated is still in question. At

worst, an analysis of the salary levels may provide a further dimension to the quality of education in the school divisions.

Table XXXV indicates the minimum and maximum salary levels, and the number of years required to reach the maximum salaries. Other "fringe benefits" may of course have been negotiated as part of the salary agreements. These features, however, would not appear to have been the salient items of the salary agreements. Consequently only the minimum and the maximum salary levels, and the number of years required to achieve the maximum level were analyzed.

In comparing the minimum salary levels it was noted that the non-unitary division was paying beginning salaries that were just as high, or higher, than the unitary divisions were paying in nearly all cases. At the maximum levels the same held true. With reference to the number of years required to obtain the maximum salary, it was observed that Division D tended to require more time in the lower classifications, but less in the higher classifications than the unitary divisions.

The only divisions to negotiate a salary level for class seven teachers were two unitary divisions. Of these, only one division had negotiated such salaries for each of the four years.

It was observed that significant differences in salary levels existed among the divisions in 1967. Apparently these differences were decreasing during the ensuing three years, for the variations were virtually removed by 1970. In fact, some of the salary schedules almost appear to duplicate each other.

TABLE XXXV

## ANNUAL SALARY LEVELS: 1967

Division	Minimum				Maximum				Years to Maximum			
	A	B	C	D	A	B	C	D	A	B	C	D
Class												
1	\$4,000	\$3,900	\$3,400	\$4,100	\$5,400	\$5,100	\$3,400	\$5,600	7	6	8	8
2	4,500	4,300	4,000	4,500	6,500	5,600	5,600	6,700	8	7	8	9
3	5,000	4,700	4,600	5,200	7,500	6,500	6,200	7,800	9	9	8	9
4	6,000	5,550	5,400	6,300	9,700	8,700	8,400	10,300	11	11	11	10
5	6,500	6,100	5,800	6,600	10,500	9,400	8,800	11,000	11	9	11	10
6	6,800	7,000	6,200	6,900	11,100	11,200	9,400	11,500	12	9	12	11
7	-----	7,900	6,700	-----	-----	12,200	10,100	-----	--	10	12	--

TABLE XXXV  
(continued): 1968

Division	Minimum				Maximum				Years to Maximum			
	A	B	C	D	A	B	C	D	A	B	C	D
Class												
1	\$4,200	\$4,000	\$4,100	\$4,200	\$5,600	\$5,500	\$5,500	\$5,700	7	6	7	8
2	4,700	4,500	4,500	4,700	6,700	6,600	6,600	6,800	8	7	8	9
3	5,400	5,400	5,300	5,500	7,800	7,800	7,700	7,900	8	8	8	8
4	6,500	6,400	6,300	6,600	10,100	9,700	9,800	10,300	9	7	9	9
5	6,900	6,800	6,700	7,000	10,900	11,000	10,800	11,000	10	9	11	9
6	7,300	7,200	7,100	7,500	11,300	11,400	11,500	11,500	10	9	11	9
7	-----	-----	7,800	-----	-----	-----	12,500	-----	--	--	9	--

TABLE XXXV  
(continued): 1969

Division	Minimum				Maximum				Years to Maximum			
	A	B	C	D	A	B	C	D	A	B	C	D
Class												
1	\$4,400	\$4,375	\$4,350	\$4,350	\$5,800	\$5,850	\$5,800	\$5,850	7	7	7	8
2	4,900	4,900	4,900	4,900	6,900	7,000	7,000	7,000	8	8	7	9
3	5,700	5,700	5,700	5,700	8,100	8,100	8,100	8,100	8	9	8	8
4	6,850	6,800	6,700	6,850	10,600	10,600	10,400	10,600	10	9	9	9
5	7,300	7,200	7,200	7,300	11,400	11,400	11,300	11,400	11	10	9	10
6	7,700	7,700	7,500	7,700	11,800	12,000	12,000	11,800	11	11	10	10
7	-----	8,200	8,000	-----	-----	12,700	13,000	-----	--	10	10	--

TABLE XXXV  
(continued): 1970

Division	Minimum				Maximum				Years to Maximum			
	A	B	C	D	A	B	C	D	A	B	C	D
Class												
1	\$4,500	\$4,500	\$4,500	\$4,500	\$6,100	\$6,100	\$6,100	\$6,100	8	8	7	8
2	5,100	5,100	5,100	5,100	7,200	7,200	7,250	7,200	9	8	7	9
3	5,900	5,900	5,900	5,900	8,400	8,400	8,400	8,400	9	9	8	9
4	7,100	7,100	7,000	7,100	11,100	11,100	11,050	11,100	9	10	10	9
5	7,600	7,600	7,550	7,600	11,800	11,900	11,900	11,800	10	10	10	10
6	8,000	8,000	7,950	8,000	12,400	12,000	12,000	12,000	10	11	10	10
7	-----	-----	8,300	-----	-----	-----	13,200	-----	--	--	10	--

### Breakdown of Operational Expenditures

O. Furno suggested that one method of comparing the quality of education among school divisions was to analyze their spending patterns. If a school division's spending pattern deviates extensively from that of the others, the category of deviation might suggest a relatively superior or inferior aspect in the overall quality of education. Table XXXVI lists the various categories of operational expenditures per weighted pupil.

Administrative expenditures per weighted pupil. These expenditures varied rather widely, with the highest unit expenditure of this category in the unitary divisions. The non-unitary division displayed a level of unit administrative expenditures that was below the median. The unit administrative expenditures were observed to increase markedly in all divisions except Division A.

Instructional expenditures per weighted pupil. The instructional services category of expenditure is probably the most important category in indicating differences in quality of education. The unitary divisions exhibited the highest instructional expenditures per weighted pupil at all times. Division D's unit instructional expenditures were consistently lower than those of the unitary divisions.

Expenditures for instructional services increased in all divisions from 1967 to 1970. The largest increase of \$112 per weighted pupil was found in Division D. This increase reduced

TABLE XXXVI  
ANALYSIS OF OPERATIONAL EXPENDITURES PER WEIGHTED PUPIL  
1967

Division	A	B	C	D
Expenditure Category				
Administration	\$---	\$ 25	\$ 22	\$ 18
Instructional Services	---	284	306	241
Maintenance	---	47	51	40
Transportation	---	43	54	93
Miscellaneous	---	1	1	1
Total	---	400	434	393

TABLE XXXVI

(continued)

1968

Division	A	B	C	D
Expenditure Category				
Administration	\$ 20	\$ 31	\$ 28	\$ 23
Instructional Services	324	370	376	276
Maintenance	48	54	52	46
Transportation	100	58	56	99
Miscellaneous	1	---	---	1
Total	493	513	512	445

TABLE XXXVI

(continued)

1969

Division	A	B	C	D
Expenditure Category				
Administration	\$ 19	\$ 32	\$ 32	\$ 26
Instructional Services	349	360	378	327
Maintenance	50	55	53	48
Transportation	100	70	59	105
Miscellaneous	1	---	---	1
Total	519	517	522	507

TABLE XXXVI

(continued)

1970

Division	A	B	C	D
Expenditure Category				
Administration	\$ 20	\$ 29	\$ 35	\$ 28
Instructional Services	378	394	388	353
Maintenance	52	53	54	49
Transportation	105	85	74	113
Miscellaneous	1	1	---	7
Total	556	562	551	550

the difference between minimum and maximum unit instructional expenditures from 21 per cent in 1967 to ten per cent in 1970. The differences in quality of education, as might be indicated by the category of instructional services expenditures per weighted pupil were apparently becoming less obvious.

Expenditures for instructional services formed the largest single category of operational expenditures. Table XXXVII indicates the percentage instructional expenditures were of operational expenditures. The percentage varied from 61.5 per cent to 73.5 per cent, with the highest proportion continually found in the unitary divisions. The lowest proportions were found in the multi-district division. Instructional expenditures as a percentage of operational expenditures fluctuated slightly in the unitary divisions but no rising trend could be discerned. In the multi-district division the percentage was increasing steadily from 1967 to 1970. However, it had not yet achieved a level where its instructional expenditures formed a proportion of the operational expenditures equal to that of the unitary divisions.

TABLE XXXVII  
INSTRUCTIONAL EXPENDITURES EXPRESSED AS A  
PERCENTAGE OF OPERATIONAL EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	----%	71.0%	70.5%	61.5%
1968	65.7	72.5	73.5	62.0
1969	67.5	69.7	72.5	64.5
1970	66.6	70.0	70.5	64.2

Maintenance expenditures. Unit costs in the maintenance category were quite similar among the divisions during each year under consideration. It was noted that the increases in expenditures for this category were very slight, and these increases too were quite similar in each division. The lowest weighted pupil expenditure for maintenance was found in Division D, the non-unitary division.

Transportation expenditures. The weighted pupil transportation expenditures varied extensively from division to division. Division D, the non-unitary division, tended to display the highest unit cost in this category. This could not necessarily be attributed to its non-unitary status. Division A, a unitary division, indicated its unit expenditures for transportation were quite similar. The geographical shape of the division and the distribution

of the residents are probably the prime determinants of the amount of the expenditure in this category. A rising trend in the transportation expenditures was observed.

Miscellaneous expenditures. Miscellaneous expenditures formed a very minor proportion of the operational expenditures. Only during 1970 in Division D was this category of expenditures of any significance. At that time the miscellaneous category amounted to approximately 1.3 per cent of the operational expenditures.

#### Audio Visual Materials

As a further dimension of the quality of education within the school divisions, audio visual materials provided by the school boards were analyzed. It is of course recognized that these items in themselves do not constitute quality in education. However, it would appear the divisions incurred the expenditures of such items in the hope that the individuals using the materials would be able to function more adequately, and thus enhance the education of the students in the divisions. In the event that the materials were not properly utilized by the teaching staff, the fact that the audio visual items were purchased would appear to indicate that a positive attitude toward the improvement of educational services at least existed.

Table XXXVIII presents a relative comparison of the number of audio visual items that were available on a per pupil basis in the divisions. The divisions appeared to have been similarly

TABLE XXXVIII  
AUDIO VISUAL SUPPLIES

Item	Number of Items per Pupil			
	Div. A	Div. B	Div. C	Div. D
Radios	.014	.023	.016	.016
Record Players	.010	.024	.016	.010
Records	.073	.170	.112	.108
Tape Recorders	.010	.010	.010	.009
Tapes	.116	.125	.062	.155
Head Phones	.004	.010	.015	.002
Television Sets	.006	.007	.003	.006
Video Tape Recorders	.0004	----	.0002	----
Overhead Projectors	.010	.007	.007	.005
Opaque Projectors	----	.0005	.003	.002
Slide Projectors	.006	.006	.005	.009
Slide Viewers	.005	.005	.003	.006
Movie Projectors (16mm.)	.005	.005	.005	.007
Loop Movie Projectors	.0004	----	.001	----
Film Strips	.260	.125	.087	.168
Dry Photo Copiers	.005	.003	.003	.006
Spirit Duplicators	.006	.006	.005	.006
Gestetner Duplicators	.003	.003	.003	.003
Stencil Duplicators	.001	.002	.002	----

stocked in a number of items, including radios, tape recorders, television sets, movie projectors, and duplicating supplies. Despite this, only one school division, a unitary division, had entries in all categories.

Division D, the multi-district division, did not appear inadequately stocked in the basic audio visual supplies. It apparently had the highest number of slide projectors, slide viewers, movie projectors (16 mm.), tapes, and dry photo copiers per student. Division D was also tied for first place in Gestetner duplicators, and placed second or was tied for second in a number of other items.

It is essential that a brief comment be made about resource centres. Division C, a unitary division, in addition to the supplies in the schools, provided a divisional resource centre which stocked records, films, film loops, and tapes. Division C also possessed the largest number of schools that had organized their own resource centres.

It thus appeared that a unitary division provided the best "all round" audio visual services for students. However, the multi-district division was not necessarily the most inadequately supplied school. In some of the basic items Division D was one of the best stocked divisions.

### Supplementary Factors

Several other aspects of quality considered in this study supplement previously discussed surrogates of quality. This

additional information focussed on programming, specialist personnel, and centralization (i.e. relative school size).

Programming. To increase the scope of the educational programs the unitary divisions supplemented what was formerly known as the commercial, general, and university entrance courses with the occupational entrance program. This program was not available in the multi-district division.

Kindergarten classes were available in virtually all elementary schools in the divisions concerned. In fact, the transportation facilities were available for the benefit of the pre-schoolers as well. Special classes for the handicapped were provided in all school divisions, and transportation for these students was again a regular feature.

Special personnel. The staffing policies in two unitary divisions had provided for the services of specialists to develop educational programs for these divisions. These teams included personnel in the areas of music, art, reading, student services (psychological services), special education, and library services. Program specialists such as the ones mentioned were not staffed in the multi-district division. However, one of the unitary divisions did not have the services of such specialist personnel either.

Relative school size. It was suggested in the review of the literature that small schools, like small classrooms, make for inefficiency in operation, and do not provide the student

population with a flexible program. This was noted to be especially significant at the secondary level. Larger schools presumably are more versatile and can provide more diversified programs.

Centralization of small schools was found to be occurring in all school divisions. It was not apparent whether this was intentional or not. Small rural schools were being closed, and where required, new schools were being opened in response to population shifts and population growth.

In order to compare the relative sizes of schools among the divisions the average number of classrooms per school (1970) were calculated for the elementary, and for the secondary level. These figures are shown in Table XXXIX.

TABLE XXXIX  
AVERAGE SCHOOL SIZE (1970)\*

	Div. A	Div. B	Div. C	Div. D
Elementary	7.6	11.0	12.4	5.7
Secondary	9.7	11.5	14.2	10.0

\*Number of classrooms per school.

At the elementary level the highest number of classrooms per school was found in the unitary divisions, and the lowest in the multi-district division. At the secondary level a unitary division again possessed the largest average number of classrooms

per school. However, Division D did not have the smallest average number of classrooms per school at the secondary level, although it was only slightly above the lowest number. It can be noted that Divisions A, B, and D had high schools that were rather similar in size. The differences may be too small to attach any importance to.

# FOOTNOTES

1. Interview with W. L. Patson, Municipal Assessment Branch,  
Winnipeg, Manitoba. July 7, 1971.
2. Telephone Interview with Mrs. Hayes, Winnipeg School  
Division No. 1. November 16, 1970.
3. Canadian Tax Foundation, Provincial Finances, 1969.  
Canadian Tax Foundation, Toronto, 1969. p. 115.
4. "Education Finance Changes", Manitoba Teacher. Manitoba  
Teachers' Society, Winnipeg, Vol. 49, No. 10, April-  
May, 1971. p. 2.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

The operations of a non-unitary, and three unitary school divisions were analyzed in this study. This chapter restates the problem and procedures, summarizes the findings, states the conclusions, and discusses the implications.

#### I. THE PROBLEM

The chief purpose of this study was to analyze and compare the operations of a non-unitary school division with three unitary school divisions in Manitoba. This problem was sub-divided into two main parts: the analysis and comparison of financial operations, and the analysis and comparison of quality surrogates.

#### II. THE PROCEDURE

The co-operation of a non-unitary and three unitary school divisions was obtained so that the study could be carried out. In order to maintain anonymity of the school divisions concerned, the three unitary divisions were identified as Divisions A, B, and C, and the multi-district division was referred to as Division D.

Data were collected from the schools, division offices, the Manitoba Department of Education, and the Municipal Assessment Branch.

The financial operations were first analyzed. Data on balanced assessments and enrolments were tabulated, and from this,

ability indices were calculated. Expenditures and staff sizes were next tabulated, and the expenditures per teacher calculated. Following this, sources of revenue, i.e. grants and real property taxes, were analyzed. This made it possible to determine ratios of educational real property revenue to balanced assessment, i.e. educational effort.

In part two of this study a number of factors that would appear to indicate quality in education were analyzed. These included retention rates, student-teacher ratios, super-numerary staff, qualifications of teachers, teaching experience, salary levels, breakdown of operational expenditures, audio visual materials supplied, and several supplementary factors.

### III. FINDINGS

The study focussed on two main areas of school division operations, namely finance, and quality in education. The findings were summarized with respect to these two sub-divisions.

#### Financial Data

The first phase of the study focussed on the analysis of the financial operations of three unitary, and one non-unitary school division. Data pertaining to balanced assessments, burden, financial ability, expenditures, revenues, and educational effort were investigated.

The highest balanced assessment was found in a unitary division. Division D, the multi-district division, possessed a balanced assessment that was slightly above the median. Division

D's balanced assessment, however, was much more similar to the assessments found in the third and fourth ranking unitary divisions than to the assessment of the first ranking division. Increases in assessment occurred throughout the years under consideration.

In order to determine the fiscal ability as indicated by assessments, it was necessary to first determine the burden. The most valid comparison of burden was presumed to be the weighted pupil unit. In 1970 Division C had a weighted pupil count of 4,347. Division A and B had 2,555 and 2,257 weighted pupils respectively. The lowest burden was found in Division D with 1,448 weighted pupils. The rank order was the same for all years concerned. The burden of Division A was observed to have remained fairly constant. That of Division B decreased about sixteen per cent from 1967 to 1970. Division C experienced a relatively large increase in the weighted pupil count (fourteen per cent) during the same period. Division D experienced a slight decrease of 2.8 per cent in the weighted burden over the same four year interval.

The financial ability was determined from the ratio of the balanced assessment to the weighted pupil count in a division. The highest and the lowest abilities were found in the unitary divisions. The unitary division with the highest balanced assessment was found to display the highest ability. Division D, the non-unitary division, indicated a financial ability that was well above the median, and similar to that of first ranking Division A.

The levels of annual educational expenditures varied widely. Division C, a unitary division, had the highest current expenditure, while Division D had the lowest, as might have been predicted from the enrolment figures. Current expenditures were observed to increase at annual rates ranging from 3.0 per cent to 5.7 per cent. Division D's rate of increase was slightly below the median. On a per teacher basis the non-unitary division tended to show a level of current expenditures near the median. When authorized teachers were considered, the current expenditures per teacher in Division D were the highest to be found.

In the operational expenditure category the rankings again followed the enrolment patterns. The rate of increase in operational expenditures was noticeably higher than the rate of increase in current expenditures. Increases in operational expenditures ranged from 4.5 per cent to 11.4 per cent annually. In the comparison of the ratios of operational expenditures to authorized teachers, Division D, the non-unitary division, displayed the highest amounts during all four years.

Local real property revenue provided the greatest proportion of funds for education in the non-unitary division. At the maximum this source paid for 75.6 per cent of current expenditures, or 83.6 per cent of operational expenditures. In the unitary divisions the local contributions would appear to have been significantly less, providing no more than 43.1 per cent of the current expenditures or 47.6 per cent of operational expenditures. It was also noted that the percentage of education paid for locally tended to rise over the four year period under consideration.

The best indicator of educational effort was considered to be the ratio of total educational real property revenue per weighted pupil to fiscal ability. This index demonstrated that Division D, the multi-district division, displayed the highest level of effort in 1967 and 1968. In 1969 and 1970 a unitary division ranked first, while Division D ranked second.

The high level of effort displayed by the unitary division in 1969 and 1970 was probably due to the rapid growth in enrolment. The other two unitary divisions indicated an index of effort that was noticeably lower than that of Divisions C or D. Had it not been for the growth factor in Division C, it is quite probable that Division D would have displayed the highest level of effort during 1969 and 1970 as well. The high level of effort found in Division D is of course due to the financial support system under which it operates.

#### Surrogates Of Quality

Phase two of the study focussed on the analysis of surrogates of quality. These surrogates included retention rates, student-teacher ratios, super-numerary staff, qualifications of teachers, teaching experience, salary levels, analysis of operational expenditures, audio visual supplies, and several supplementary factors.

Two measures of retention rates were calculated: secondary-elementary enrolment ratios, and grade twelve-secondary enrolment ratios. In the comparison of the former ratio Division D, the multi-district division, ranked first during three of the four

years considered, while a unitary division ranked first in the remaining year. The ratios of grade twelve to secondary enrolments showed that two unitary divisions each ranked first on one occasion and that the non-unitary division ranked first on the other two occasions.

In the comparison of student-teacher ratios at the elementary level the unitary divisions outranked the multi-district division at all times. At the secondary level Division D ranked second or third, holding a median position.

The proportion of super-numerary teachers was comparatively less in the unitary divisions than in the non-unitary division. The percentage of such teachers in the unitary divisions was observed to remain relatively constant, or to decrease, while in Division D the proportion of teachers over grant increased from 13.3 per cent to 18.6 per cent of the total staff from 1967 to 1970.

The ranking pattern for teachers' qualifications varied extensively. It was observed however that the non-unitary division tended to staff the lowest percentage of teachers with no training beyond high school. Despite this, Division D in 1970 was the only division with teachers in this category.

Teachers with a general degree and one year of teacher training formed the largest proportion of teachers in Division D on one occasion. In one other year Division D was tied with a unitary division for top rank. In the other two years Division D held a second place position.

At the upper levels of training of five or more years, the unitary divisions outclassed Division D. Division D employed the lowest proportion of teachers in this category of training.

For comparison purposes average weighted indices of qualifications were calculated for each division. The highest and the lowest averages were generally found in the unitary divisions. Division D, the multi-district division, held a position near the median. It would thus appear that Division D did not staff teachers with lesser qualifications to a greater degree than the unitary divisions.

In the comparison of teaching experience of teachers it was found that the median experience of the multi-district division was the same as that of the unitary divisions, six to ten years. Only in the upper range of experience of more than ten years was the non-unitary division observed to lag behind the unitary divisions.

Average indices of weighted experience were calculated and indicated that the highest as well as the lowest averages were generally found in the unitary divisions. Division D tended to rank near the median in average weighted experience, supporting the generalization that the multi-district division did not staff inexperienced teachers to any greater degree than the unitary divisions.

Salary levels were found to vary rather extensively in 1967. By 1970 the differences appeared to have been largely removed. At the minimum levels of experience Division D ranked

first during 1967 and 1968. In 1969 and 1970 the non-unitary division was still among the best in starting salaries. At the maximum level of experience Division D too ranked first in 1967 and 1968, and in 1969 and 1970 was still near the top.

A point to note was that Divisions B and C, both unitary divisions, were the only divisions to have negotiated salaries for the class seven category.

Operational expenditures were analyzed according to their classifications as expenditures in administration, instructional services, maintenance, transportation, and miscellaneous items. In administration the unitary divisions tended to have the highest as well as the lowest expenditures. Division D had an intermediate level of expenditures in this item. In instructional service expenditures the unitary divisions displayed the highest levels, while Division D ranked last. The difference between first and last place in this category of expenditures per weighted pupil was observed to decrease from 21 per cent to ten per cent over the four year period. Maintenance expenditures were quite similar in all divisions, and experienced only a slight increase from 1967 to 1970. Transportation expenditures were observed to vary widely, probably reflecting the geographical shape and size of the division. It was noted however, that Division D tended to have the highest unit expenditures in this category.

The supply of basic audio visual materials appeared to be rather similar among the divisions. Some differences did exist

however. A unitary division was the only division to have stocked all of the audio visual items listed, and was also the only division to provide the services of a divisional resource centre for its schools. Despite this, Division D, the non-unitary division, was not observed to be stocked less adequately in the basic materials than any of the unitary divisions.

With reference to programming, it was noted that kindergarten as well as special classes were provided in all divisions. However, occupational entrance programs were provided only in the unitary divisions. To develop, implement, and improve educational programs two of the unitary divisions had obtained the services of a number of specialist personnel.

The final surrogate of quality to be analyzed was the relative school size. At the elementary level the average number of classrooms per school varied extensively from division to division. The smallest average at the elementary level was found in Division D. At the secondary level Division D did not have the smallest average number of classrooms per school although there was only a slight difference between the average of Division D and that of the last place division.

#### IV. CONCLUSIONS

Statistical tests of significance were not utilized in this study for two reasons: the sample was too small to lend itself to a statistical technique, and since the sample was non-random, tests of significance could not validly be applied.

Despite this, a number of conclusions may be drawn from the information as presented.

Conclusions Pertaining to Financial Data

1. Division D, the multi-district division, ranked second in balanced assessment. This was slightly above the median. The balanced assessment of this division was much more similar to those found in the third and fourth ranking unitary divisions than to that of the first ranking unitary division.
2. When balanced assessments were related to burden the non-unitary division displayed financial ability that was only slightly less than that of the top ranking unitary division.
3. Division D was found to have one of the highest current expenditures per authorized teacher, as well as the highest operational expenditures per authorized teacher.
4. Expenditures in education, both operational and current, increased at varying rates, ranging up to an average annual rate of increase of 11.4 per cent for operational expenditures and 7.1 per cent for current expenditures. There would appear to have been increasing emphasis on expenditures of operation.
5. Government grants for current educational expenditures at the maximum paid for 38.3 per cent of the cost of education in the non-unitary division, and 85.9 per cent in the unitary divisions in 1967. These proportions

were reduced to 25.6 per cent in the non-unitary division and 74.9 per cent in the unitary divisions by 1970. The rate of increase of grants for current expenditures did not keep pace with the rate of increase in expenditures over the four year period analyzed. This has resulted in increased local levies. (It must be noted, however, that increased capital grants may have been made by the provincial government where school divisions qualified.)

6. The multi-district division ranked first on two occasions and second on two occasions in the amount of educational taxes collected from local real property. This situation prevailed despite the fact that the non-unitary division did not have the highest balanced assessment, nor the highest burden. When the educational real property revenue was related to the balanced assessment, the multi-district division was observed to display the highest level of effort in 1967, and in 1968. In 1969 and 1970 a unitary division exhibited the highest levels of effort. The high level of effort in Division D was due to the effect of the support system under which it operated, while rapidly increasing enrolments were probably instrumental in effecting high levels of effort in the unitary division that exceeded the levels of effort in Division D in 1969 and 1970. It was also noted that the levels of effort were increasing in the unitary as well as the non-unitary division.

Conclusions Pertaining to Quality Surrogates

1. The retention rate in the non-unitary division was one of the best.
2. Student-teacher ratios were generally higher in Division D than in the unitary divisions.
3. The highest percentage of super-numerary teachers was generally found in Division D, the multi-district division. The proportion was found to be increasing.
4. The proportion of teachers without training beyond high school was not necessarily greater in Division D than in the unitary divisions. The percentage of teachers with degrees and one year of teacher training in Division D was one of the highest. Division D, however, did staff a lower percentage of teachers with training beyond a general degree and one year of teacher training than did the unitary divisions. Average weighted indices of training showed that Division D ranked near the median in teacher qualifications. In view of this and the fact that the median level of training of teachers in Division D was the same as that of the unitary divisions, it was concluded that Division D did not staff teachers with lesser qualifications to a greater degree than the unitary divisions.
5. Division D did not appear to staff teachers with less experience to a greater degree than did the unitary divisions.

6. Salary levels at both the minimum and maximum ranges in Division D were generally as good as, or better than, the salary levels in the unitary divisions.
7. Although Division D ranked very high in the current and operational expenditures per authorized teacher, Division D tended to have the lowest instructional expenditures per pupil. The amount was increasing and approaching the levels of the unitary divisions' instructional expenditures per pupil.
8. Division D did not appear to be stocked less adequately in basic audio visual supplies than the unitary divisions.
9. Division D provided educational programs similar to those of the unitary divisions. Division D did not, however, provide the occupational entrance program.
10. Division D had the smallest number of classrooms per school at the elementary level. At the secondary level it ranked near the last place division.

#### Conclusions Pertaining to Relationship of Quality to Support System

Based upon the data as presented in this study the surrogates of quality appeared to suggest that the non-unitary division, Division D, was not providing a quality of education that was inferior to that of the unitary divisions. In order to provide a quality of education similar to that found in the unitary divisions, it was necessary for the multi-district division to administer high local levies due to the smaller grants received. Had the

financial ability of Division D not been comparatively high, it is doubtful whether a quality of education similar to that found in unitary divisions could have been maintained.

#### V. INFERENCES AND IMPLICATIONS

Increasing costs in education and the lack of corresponding rates of increase in grants have placed a growing burden on the property owner. This was observed in the unitary as well as in the non-unitary divisions. It would appear that the inflationary aspects of the economy which has brought about a portion of the increased expenditures will have to be restricted, or the public may find it necessary to settle for an inferior quality of education in the future. Or, alternately, the provincial government will have to assume a greater proportion of the increased costs of education. This may require a shifting in the incidence of the educational tax, or at least a reduction in the proportion of education paid for by real property taxes.

The lack of the occupational program in the non-unitary division would appear to be due mainly to the lack of grants required to implement such a program. It appeared that the non-unitary division was already making a very high effort to maintain a quality of education similar to that found in the unitary divisions without getting involved in an occupational program. The provincial government might well reconsider the grants made to non-unitary divisions with respect to implementing occupational programs. Certainly greater equality of educational opportunity might then exist.

The non-unitary division was generally found to have the highest percentage of super-numerary teachers. No grants were provided for these teachers. Despite the high percentage of super-numerary teachers the multi-district division staffed, its student-teacher ratio was comparatively higher than those of the unitary divisions. If the differences in the student-teacher ratios are considered large enough to be important, the provincial government might well be advised to consider a different method of calculating the number of authorized teachers in non-unitary divisions.

Research into the operations of other non-unitary divisions may prove worthwhile. Not all multi-district divisions may be as fortunate as the non-unitary division in this study in having such high ability as to permit the high local levies found in Division D. If this is the case, the provincial government would be urged to take steps to correct the situation. A more favorable grant scheme would appear essential.

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## APPENDIX

TABLE XL  
INDUSTRIAL, COMMERCIAL, AND OTHER PROPERTIES  
EXPRESSED AS A PERCENTAGE OF  
BALANCED ASSESSMENTS

Year	Div. A	Div. B	Div. C
1967	---	12.4	14.9
1968	8.5	11.7	14.7
1969	8.4	10.8	13.9
1970	9.3	10.8	15.4

TABLE XLI  
EDUCATIONAL REAL PROPERTY REVENUE PER PUPIL

Year	Div. A	Div. B	Div. C	Div. D
1967	\$---	\$ 79	\$ 90	\$315
1968	256	149	131	361
1969	239	172	169	473
1970	260	219	189	479
Average Annual % Change	.8	43.7	27.5	13.0

TABLE XLII  
EDUCATIONAL REAL PROPERTY REVENUE PER WEIGHTED PUPIL

Year	Div. A	Div. B	Div. C	Div. D
1967	\$---	\$ 73	\$ 85	\$286
1968	235	137	122	325
1969	219	158	157	423
1970	238	202	175	432
Average Annual % Change	.4	44.2	26.5	12.8

TABLE XLIII  
SPECIAL LEVY REVENUE EXPRESSED AS A PERCENTAGE  
OF TOTAL EDUCATIONAL REAL PROPERTY REVENUE

Year	Div. A	Div. B	Div. C	Div. D
1967	----%	29.3%	46.5%	64.0%
1968	34.8	42.9	51.2	66.4
1969	40.0	54.3	67.6	68.7
1970	45.3	62.3	71.8	68.1

TABLE XLIV  
SPECIAL LEVY REVENUE EXPRESSED AS A PERCENTAGE OF  
CURRENT EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	----%	4.5%	6.6%	39.5%
1968	15.0	10.3	10.5	42.6
1969	15.4	14.6	17.7	51.9
1970	17.9	19.0	19.4	50.7

TABLE XLV  
SPECIAL LEVY REVENUE EXPRESSED AS A PERCENTAGE OF  
OPERATIONAL EXPENDITURES

Year	Div. A	Div. B	Div. C	Div. D
1967	----%	5.3%	9.1%	46.8%
1968	16.6	11.5	12.2	49.6
1969	16.8	16.5	20.2	57.4
1970	19.4	22.5	22.8	53.4

TABLE XLVI  
CURRENT EXPENDITURE-ASSESSMENT RATIO

Year	Div. A	Div. B	Div. C	Div. D
1967	---%	11.1%	16.6%	5.4%
1968	5.4	11.7	16.5	5.9
1969	5.6	11.0	16.7	5.6
1970	5.6	10.9	17.9	5.8

TABLE XLVII  
OPERATIONAL EXPENDITURE-ASSESSMENT RATIO

Year	Div. A	Div. B	Div. C	Div. D
1967	---%	9.3%	12.0%	4.6%
1968	4.8	10.4	14.3	5.1
1969	5.1	9.7	14.6	5.1
1970	5.2	8.9	15.3	5.5