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## Financing Education in a Time of Declining Enrolments

*Analysing the problems threatening education systems in a time of sharply declining enrolments, Dean Atherton is concerned to propose ways and means both to maintain the system at a reduced level and also to cushion the financial shocks. For the first he examines various devices for retaining teachers in employment, rather than releasing them only to rehire later when elementary enrolment climbs again, in eight years' time. For the second he proposes a combination of some tinkering with present formulas, and a more fundamental change in the basis of financing, that would be grounded, not on enrolment figures, but on those programs that a system decides to be basic to its offerings.*

Not very many years ago, it seems to me, I was preparing papers dealing with the topic of "Educational Finance in a Time of Increasing Enrolments". Although many of the problems involved in that treatment of the topic were very much the same, the context is now quite different.

During the 1960's there was a public acceptance of the priority accorded to educational finance, which, as I have noted elsewhere, was reflected by the growth in government expenditure on education from fourteen percent of total government expenditure in 1960 to nineteen percent in 1974.<sup>1</sup> The increase occurred at a time when total government expenditure on goods and services as a proportion of gross national product had not changed significantly. There is every indication that this trend is being reversed.

The priorities accorded educational finance were also reflected in the confidence accorded the teaching profession during this period. Lessened control by provincial governments, increased emphasis on innovation and experimentation, and an increased professional role in educational decision-making were some of the more obvious consequences of the new climate. Again the climate in the seventies is apparently changing. We see increasing government regulations, the growth of a "Back to the Basics" movement in curriculum, and growing strain between professional organizations and governments over the decision-making processes, particularly those affecting resource allocations.

Given this change in the context of educational finance, it seems clear to me that regardless of the enrolment picture there is evidence of a less sympathetic attitude now towards the allocation of resources to education. Furthermore, my experience and familiarity with the literature suggests that growing concern over educational costs was clearly evident in the period 1967-69, the period immediately prior to the beginning of the enrolment decline of the 70's. I recall some of the more dramatic projections of Statistics Canada that by the end of the century educational costs, unless controlled, would account for a major promotion of Canada's G.N.P.

My purpose in making these introductory observations is to suggest that we would be in error to assume that the only problems facing educational finance during the next decade are those associated with enrolment. One of the most significant questions being asked at the end of the sixties was "Why are total educational costs increasing more rapidly than the size of the system?" Today the question is "Why are educational costs increasing at a time when enrolments are declining?" The question is the same; the context different. No discussion of educational finance at a time of declining enrolments is therefore complete without detailed reference to the question of educational cost, and I shall address this question later.

To begin with, however, I would like to attempt to identify some of the problems which are a consequence of the decline in enrolments.

### **Educational consequences of enrolment decline**

Let me first assert that the problems are perceived primarily by the teaching profession. To a public suffering from the combined effects of inflation and recession, the decline in enrolments is almost welcomed as providing the opportunity for a reduction or stabilization in taxation for education. If there is redundancy and unemployment among teachers this is perceived by the public as part of an overall national problem, and there is fairly widespread reluctance to view the teaching profession as a special group of employees who should be insulated from the problem. As yet there is only a small group of the population which is becoming aware of the major effect of declining enrolment, a reduction in program. For instance, a reduction of a Special Education program as a consequence of declining total enrolment affects directly only those parents who have personal concerns for Special Education. However, as further reduced pupil enrolments lead to closure of neighbourhood schools and the elimination of programs affecting larger groups, there may be increased sympathy for the professional concern.

The profession seems to have two major concerns. The first and predominant is that of teacher unemployment. The second and less clearly evident is with the reduction of program and its long-term consequences. Both concerns are connected and come together with the focus on overall pupil-teacher ratios. Unfortunately, as we shall see, the professional

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preoccupation with reduced pupil-teacher ratios, which could be a partial solution both to the unemployment problem and the program maintenance problem, may be difficult to press for because of the public attitudes I have just mentioned.

Although personally concerned over unemployment, I would recommend concentrating on the educational issue. I would hope that by doing so some mitigation of the redundancy issue may be achieved.

The first step in examining the educational issue involves some examination of the enrolment problem itself. Governments at all levels are engaged in making population projections; as a consequence of varying assumptions about such factors as fertility rates, mortality rates, and migration rates, varying projections result. Although such projections are essential for the purpose of estimating future resource demands, I believe our purpose would be better served by making only two observations which appear to be generally accepted.

The first is that most population projections suggest a cyclic pattern of enrolment, with a general decline in all provinces in elementary population until the early 1980's. Thereafter, elementary populations will tend to increase until, by the end of the decade, the populations will approximate or exceed those of the previous peak of the late 1960's. As far as the secondary population is concerned, the decline will continue until the middle of the 1980's and increase thereafter. Given this pattern of decline and increase, it would appear to me to be quite wrong to proceed in terms of financing as though a wholesale dismantling of the system were necessary.

The second observation is that projections of aggregate populations tend to obscure local or regional patterns of increase and decline, which increase educational problems. For instance, total elementary enrolment declined in Ontario between 1969 and 1973 from 1,456,117 to 1,422,885.<sup>2</sup> The decline was offset by a modest increase in secondary enrolment, so that overall enrolment increased by some 1½%. However, the elementary enrolment decrease of just over 3% conceals the fact that in the county of Renfrew, a primarily rural county located to the south of Ottawa, elementary enrolment declined by 14% and in the neighbouring county Leeds and Grenville the decline amounted to 8%. In fact, enrolments during the period declined in twenty-four out of thirty counties reported. At the same time elementary enrolments in counties closer to metropolitan areas were showing the opposite trend. For instance, elementary enrolment in Peel County, located just outside Toronto, showed 24% increase over the same period.<sup>3</sup> The significance of this observation lies in the fact that intra-provincial migration will continually create areas of increasing and declining enrolments, and awareness of these changes must be incorporated into financial structuring.

A financial structure based on enrolment concerns only could result

in a reduction of services in areas of rapidly declining enrolment to the point where any concept of educational equality disappeared even if the overall system were expanding. Increased centralization of facilities in the areas of decline seems to present no solution. For one thing, transportation costs are increasing dramatically; for another, most rural areas are already centralized and serious questions would then be raised about the effects of longer bus journeys on student performance.

These two observations seem to me to have very significant implications for patterns of educational finance. The first implies that any reduction in the size of the system should be planned so that the expected growth of the system within six or seven years will not be accompanied by a critical shortage of specialized teachers. The second observation suggests a re-examination of the basis of resource allocation. In provinces which have grant structure the assumption underlying the system has not changed from that proposed by the great names of the 1930's such as Strayer, Haig and Mort — namely, that fiscal equalization is the best route to educational equalization. As a result, our grant structures tend to define need in terms of enrolment and provide resources on that basis. Most grant systems provide for centrally-determined amounts of money per pupil, per classroom, or per teacher (normally based on mandated pupil-teacher ratios). Even in provinces where there is complete provincial funding, resources tend to be allocated on a formula basis. Obviously such an approach has one major effect. The variety and scope of educational programming tends to be determined by the total number of students in the system.

Regardless of the grant-weighting systems by which most provinces increase the unit of funding in recognition of special educational need, when overall income is reduced there is a tendency for school boards to reduce the degree of special need met. Thus, in Toronto recently, a decision was made to reduce the number of special education classes in spite of the demonstrated need and in spite of the weighting factor provided for special education in the grant formula. One might legitimately ask if the decision was made as the result of educational considerations or as the result of a desire to eliminate classes with low-pupil-teacher ratios, so as to improve the overall ratio in the system, which is shrinking.

### **Three factors in the present cost structure**

Before beginning a discussion of what might be done to mitigate the educational consequences of current approaches to resource allocation, however, we must address ourselves to a problem which influences the level of overall resource allocation. I refer, of course, to the question asked previously, "Why are educational costs increasing at a time when enrolments are declining?" Consideration of this question involves the cost structure of education. Without a satisfactory response to this question it is unlikely that we will be able to deal effectively with the consequences of declining enrolments.

To some extent the financial difficulties of education during the period of the decline will be influenced by administrative and political decisions on cost factors taken a number of years ago. For instance, consider the price level of teaching services. A substantial part of the rapid rise in teachers' salaries during the sixties and seventies was and is a function of the higher level of teacher certification and qualification. In 1960-61 only 17% of the teachers in the Atlantic Provinces had university degrees; by 1970-71 this proportion had risen to 38%. The corresponding figures from the Western Provinces are 27% and 52%.<sup>4</sup> These advances in qualification may be attributed to either of two causes — the decisions of Departments and Ministries of Education to raise the levels of requirement for certification, or the desire of teachers to take advantage of the widely increased offerings of universities and colleges. The effects, however, are the same. More and more teachers are now moving from minimum to maximum salaries across as well as down on the typical grid salary structure.

Certainly the increase in formal qualifications has accounted for a significant part of the overall 160% increase in average salary in Canada for the period 1961-62 and 1974-75. The trend towards increasing costs must be expected to continue, since there is still a large segment of the teaching force actively engaged in improving qualification. The need, however, to provide for the additional costs of qualification is certainly going to have an effect on the extent to which governments are able to make special provision for areas where enrolments are declining. Clearly this is a case of administrative decisions taken ten or more years ago creating additional costs for years to come; unfortunately, many of those responsible for the initial decisions are among those most loudly bewailing the consequences.

We must further note that decisions concerning pupil-teacher ratios taken in the sixties will also influence strongly the costs of education in the late seventies. Between 1969-72 and 1974-75 the average pupil-teacher ratio in elementary schools declined from 26.8:1 to 23.8:1, by just over eleven percent. In the secondary school ratios declined from 21.0:1 to 16.8:1, or nearly twenty-nine percent.<sup>5</sup> The decline reflected an effort on the part of school boards and governments to provide such benefits to students as enriched programs, a greater choice of electives, more consultative assistance, and more recognition of special needs. Although it should be pointed out that there is substantial difference between pupil-teacher ratio and class size, and that the decline in class size during the decade was not as dramatic, the point can be made that the reduction of the overall pupil-teacher ratio during the time of increasing enrolments has had a substantial influence on the cost structure of education.

Had this substantial reduction not taken place in the sixties, it might have been appropriate at this time of declining enrolments to argue for the opportunity to be taken to reduce pupil-teacher ratios, on educational grounds. Since a reduction in pupil-teacher ratios is an obvious method of easing the problem of teacher surplus, some of the

impact of declining enrolments might have been offset. It is highly debatable, however, if such a general educational argument for further reduction in ratios will be acceptable to the public at this time. As Ryan and Greenfield have pointed out

There is no such thing as a small or large class. Because a 'small' class of 30 may prove to be as effective as a 'small' class of 20, it is obvious that the absolute size is not the vital factor. The opinion of the teacher is probably what determines 'small' or 'large'.<sup>6</sup>

Nevertheless, if one were to assume that the current pupil-teacher ratio were optimal at the current levels of enrolment, it might be anticipated that some further reductions in pupil-teacher ratio would be necessary *because of declining enrolments*. There is a "lumpiness" to educational inputs which means that the same level of teacher service must be maintained to serve a numerically wide range of clients. Thus in an elementary school with ten classrooms each enrolling 25 students and served by one teacher, it would be difficult to argue that because each classroom declined by 5 students, a reduction of 20% in enrolment, the staff complement should decline by two. The needs of an adequate program are such that a proportionate reduction in teaching staff would involve a much greater than proportional reduction in total program. Again, at the high school level, there is a need to maintain specialist teachers even if they are working below the optimal ratio, if the same degree of freedom of choice is to be maintained for students. In other words, as far as pupil-teacher ratios are concerned, we must accept that vague arguments relating "quality" of education directly to pupil-teacher ratios have outlived their usefulness. We must instead look towards a careful analysis of program need to provide an adequate rationale for staffing ratios.

A third cost factor will also become increasingly apparent. With the cessation of growth and the consequent reduction in new entrants to the profession, it must be expected that the average length of experience among teachers will steadily increase. As this happens the average salary will reflect much more the maxima of the grid patterns, than the minima. While the effect of this experiential increment on the rate of cost increase will decrease as more and more of the profession reach maxima, it must be noted that the most severe impact will be felt during the next five years — the most critical years of the decline.

This brief discussion of the three most important factors in the cost structure permits us to reexamine the issue about overall financing in a time of declining enrolments. First given the continuing concern at the provincial and municipal level about the total cost of education, it seems unrealistic to me that the profession should expect that pupil-teacher ratios will be lowered sufficiently to absorb surplus teachers and, at the same time, expect a continuation of a salary grid which escalates teaching costs so rapidly. An acceptance by the profession of a salary structure which would limit the amount of additional salary payable as a consequence of improved qualifications would make avail-

able more resources for reallocation. The continuing demand to reduce pupil-teacher ratios and at the same time to provide higher salaries will be one of the major problems facing those responsible for financing education during the period of the decline.

Unfortunately the problem has little to do directly with educational problems. Unless some resolution of the problem of escalating costs can be found, however, there may be an ever-deepening crisis with an atmosphere of confrontation which can only have adverse effects on public education as a whole. Obviously this would be unfortunate since there are grounds for suggesting that the continued maintenance of the system, at moderately reduced levels, is educationally desirable.

### **Maintaining the system at reduced level**

Firstly, as I have attempted to show, the current decline in enrolment is not a permanent feature of the educational system. The rapid increase in elementary enrolment to a new high point in the 1980's will require a greater number of teachers than in the previous peak year of 1970. It is unlikely that that increase in demand can be met by teachers entering the profession straight from university, since the potential university population will be declining sharply during the same period. If we are to avoid a repetition of the emergency teacher training schemes characteristic of our last "crisis" it will be necessary to provide for reentry to the profession of a substantial number of teachers who in the next five years may be described as redundant. Obviously the best way to provide for reentry is to maintain the employment of those already in it. There are a number of ways of attaining this objective which need not increase overall cost but present a reasonable alternative to redundancy. School systems might encourage the development of part-time contracts. Teachers might work for part of a day throughout the year, or for certain periods within the year. It might also be possible to attempt some variation of differentiated staffing, utilizing part-time teachers. Instead of having one teacher for a grade, there might be two or three who could act as a team, each one of whom might work in a specialist capacity or role. Although differentiated staffing has not been widely adopted for a variety of reasons, it has never been attempted from the viewpoint of an alternative to redundancy! The part-time contract is not a new proposal, but the major arguments against it have always been the need to maintain continuous contact with students and the lack of commitment which is held to attend a part-time contract. My own experience with part-time contracts, which are common at the university, is that commitment is a function of the individual rather than of the contract itself. Furthermore, the degree of specialization now acceptable even at the elementary level tends to render the continuous contact argument weak.

A second approach might be to encourage leaves of absence and sabbaticals at lower proportions of salaries than are now current, using the balance of the budgeted salary to hire replacements. One might also encourage short-term sabbaticals on the same basis. I might note here

that one of the difficulties with present sabbatical arrangements is that the salary grid ensures that the cost to an employer of a sabbatical used to upgrade a teacher's qualifications will continue many years into the future. The sabbatical too often becomes a long-term liability, not a short-term asset!

A further device would be the relocation of secondary teachers to elementary schools, and vice-versa. Many would contend that although such mechanisms are already in existence they present administrative problems as well as being unpopular with teaching staff. Most departures from normal practice cause administrative problems, and can be coped with. The lack of popularity with teachers might be a function of the lack of provision for fringe benefits, pension rights, and seniority in the system. Such provisions can be included in contracts and would, I repeat, offer an alternative to redundancy. The need to maintain a cadre of teachers in part-time employment is desirable also from a future-cost perspective.

A sudden increase in demand for teachers in the 1980's after some years of decline will place teacher's associations in an advantageous position with respect to collective bargaining. We might expect that proposals for increased salaries in order to attract new teachers will be put forward, as they were during times of previous shortage. Such proposals will, one would expect, also be reflected in the upper levels of the grid, thus leading to significantly higher costs. Reductions in pupil-teacher ratios negotiated as alternatives to redundancy during the period of the decline may not be renegotiated during the increase, so the cycle of increasing cost will be repeated. The existence of a pool of part-time qualified and currently experienced teachers may do much to offset this situation.

The above suggestions are directed towards maintaining school systems so that the period of increase expected in the 1980's will not lead to further crises. In order to recognize the need to maintain properly reduced levels of teaching staff, governments will need to make some adjustments in the methods of providing support. I should acknowledge here that most provincial governments have already recognized the problems associated with declining enrolments by providing additional funds to districts where enrolments are declining. Ontario for instance included up until 1976 a provision for declining enrolments in the computation of the formula weighting needed to arrive at the per-student grant ceiling. Manitoba on the other hand makes a per-pupil grant of \$350.00 when enrolments decline by more than one percent from the previous year. The weakness of the current approaches seems to me that the monies received in respect to declining enrolments are not known until after the year has begun, which is a rather poor time to make budgetary decisions. What would be preferable is a system which recognizes that a cushion is required and will minimize the impact of a decline *in advance*. I might suggest two approaches. The first involves tinkering with the current system and may be perceived as a stop gap measure. The second requires a more thoroughgoing analysis.



## Two approaches to providing a cushion

Perhaps the simplest approach to minimizing the effect of declining enrolments is the use of averaging techniques in the determination of grants. One application of this approach would be to weight current year enrolments as one third or one quarter in the computation of eligibility. For example, enrolment might be calculated as follows:

$$\text{Enrolment (for grant purposes 1977)} = \frac{\text{Enrolment in 1975}}{3} + \frac{\text{Enrolment in 1976}}{3} + \frac{\text{Enrolment in 1977}}{3}$$

This technique, known as slip-year financing, has been characteristic of financing post-secondary education for a number of years. At the post-secondary level it has acted as a disincentive to growth, and this feature would need to be controlled carefully if applied to public elementary and secondary systems. As has been noted previously in the overall pattern within provinces, some districts are increasing in size and some are decreasing. Where enrolments are increasing there is an immediate need for resources, and averaging techniques applied to such districts would lead to difficulties.

Another relatively simple approach would be the use of so-called base-year financing. This involves identifying a base year for enrolment and grant purposes and adjusting annually by some percentage figure any change in enrolment from the base year. Thus if the enrolment in 1976 was identified as the base year and 50 percent as the adjustment percentage:

$$E_{1977} = E_{1976} \pm [ .5 (E_{1976} - E_{1977}) ]$$

The same proviso concerning districts with increasing enrolments must be made. Increasing enrolments require resources immediately.

Both variations of the averaging approach have decided advantages. They increase the predictability of revenue and therefore tend to improve planning. They both serve to cushion the impact of sequential years of decline. The major disadvantage of both variations is that they preserve the relationship between enrolment and program, which is difficult to accept in terms of educational equity.

In systems where enrolments are only used indirectly, as in Maryland systems or in systems of full provincial finance, attention must be focused on pupil-teacher ratios. Cushioning the impact in these systems is likely to be more difficult, since ratios are so visible and therefore politically sensitive. However, in both these systems, and in the provinces with grant structures based on enrolment, it would be more appropriate to use program analysis as a basis for establishing application resources during the decline. Such analysis would provide the basis for the second approach.

Program analysis would be, I suggest, more satisfactory from an educational point of view. It would involve moving away from the student or the teacher as the basic unit of funding. To return to our example, is it true that the cost of offering a program of studies to 200 students in a 10 room elementary school is 20 percent lower than if 250 students were in the school? Most provincial financing systems assume that it is. Is it true that one needs fifty percent less equipment in a physics lab because 25 students are studying physics rather than 50? Most school board allocation policies would assume that this is true. It would, I contend, be better to recognize that the basis of educational finance is teachers and programs. It would also be more realistic to recognize that most costs tend to be fixed over quite a wide range of enrolments because of the need to provide the same basic programs. A system of finance which would recognize these facts would begin by defining what constituted a basic and required program in educational terms, and proceed by analysing the quantity of inputs required to provide this program.

It might be expected that the definition of basic programs and the resources required to mount them would be the function of the provincial government which would in turn accept the responsibility for financing it.

Among the more desirable advantages of such a system would be

- 1) The decrease of dependency upon enrolment as the primary determinant of program decisions
- 2) An emphasis on basic program and equality of educational opportunity
- 3) A more logical basis for provincial government financing
- 4) Avoidance of centralization as a trade-off for declining enrolments

If it be argued that this approach to financing would lead to a more central influence in curriculum design and diminish the already circumscribed power of local boards, I would have to agree. I would point out, however, that my concern is with basic program rather than with total program. It might well be that given adequate financial support to provide a basic and provincially-mandated program of studies, local curriculum initiatives and local autonomy would be directed towards some part of the curriculum not covered by basic funding.

In spite of the apparently radical nature of this proposal, a system similar in principle has been operating in the Hutterite schools of Western Canada for many years. Aspects of the system may also be seen in operation in provincially administered school systems of Northern Canada, as well as in Federally operated schools.

I realize that I have not been optimistic in approaching the problem of financing education at a time of declining enrolments. The most talked-of solutions to the problem — such as early retirement and

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reduction of the pupil-teacher ratios — I do not see as truly viable, since they tend to increase total costs per student at a time when this is not easily defended politically or educationally. At the core of the problem are two historically accepted structures: the salary grid, which ensures that average salaries will continue to increase at a rate faster than any basic settlements provide for, and the per-pupil basis of resource allocation, which ties educational program rather directly to the total number of students in the system.

Although the deficiencies of these two structures are very apparent at a time of decreasing enrolments overall, they always exist, as districts which have experienced the results of intra-provincial migration are aware. Until some attempts to modify both structures are successful, we will be faced with severe problems in educational finance whether enrolments be increasing or decreasing.

#### NOTE

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