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ABSTRACT

To discuss the ways in which a planner can specify future education needs in a changing political climate, the author focuses on Ontario, and uses tables and enrollment projections as illustrations. The author notes that the issue of how much to spend on education is political, and observes that, in Ontario, the growing demand will be for enrollment in institutions of higher education. The report discusses ways in which planners might meet the demands of this increased enrollment. (JF)

SPECIFYING FUTURE EDUCATIONAL NEEDS IN A CHANGING POLITICAL CLIMATE

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Number 8. C. Watson. "Specifying Future Educational Needs in a Changing Political Climate".

SPECIFYING FUTURE EDUCATIONAL NEEDS IN A CHANGING POLITICAL CLIMATE

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Specifying Future Educational Needs In a Changing Political Climate

Ladies and Gentlemen:

In order to prepare my paper for today I first spent ar hour or so discussing the theme of the conference with two of my colleagues who were on its planning committee. This was several months ago. I learned that for three days we were expected to take "A broad look at future educational needs", that the audience would probably consist of academics who operate educational systems and institutions and who are accountable to public authorities for their administration; of public officials who are responsible for regulating educational systems and advising on policy decisions as to their nature, their clientele, their process and their funding; of elected politicians who make educational policy decisions; and members of the public and representatives of industry who have an interest in this public sector because (a) they and their children are its clients; (b) they direct industries which use its "products" (i.e. they employ its graduates) and/or (c) they direct industries which supply its "needs".

I have been a professor in the Department of Educational Planning of OISE for six years. Before that I worked for almost two years in the Department of Educational Research of the College of Education of the University of Toronto (the institution which used to be known as O.C.E.) which undertook many educational planning tasks for the Ontario Department of Education and various reform committees set up by the Ontario Minister of Education. For about eight years, then, I have worked full time preparing what might be generously called "estimates of future condition" of the educational system of Ontario in order that reform might be planned and implemented.

Over these years I have made many speeches about the "future" of education in Ontario, an average of between two and three per year. So being a planner by nature as well as vocation my second step in preparing this paper was to get out my file of old speeches and read carefully through them to see a) what I could use; b) what I could adapt; and c) what was now unusable. Having read these speeches I took my third preparation step before sitting down to write (and not all this activity was merely an example of my reluctance to set to work, although I admit there was a grain of "rationalization of delay" in all this), which was to check statistical information readily available in my department showing the present condition of Ontario's educational institutions-- their enrollment, plant, teachers and professors, programs of study, budgets etc.-- and five and ten year estimates of change.

The three steps which I took are basic to the work of a planner: first to talk to the client, who defines the task; second to look at the task to try to estimate what is new, what is unlikely to change, what must be discarded, what can be salvaged, what cannot be changed (or at least only at such cost as to likely prove impracticable); third to try in precise terms to statistically define the present and the past in order to look at the future.

Moreover they enabled me to frame some generalizations with which I wish to begin, with which I always begin. So if there are members of this audience who have already heard me speak about educational planning or predicting the future needs of educational institutions in this province, they will find the first part of this speech familiar. If they find it tautological, and hence boring, my apologies. These points are nevertheless true and must be reiterared, because however frequently and firmly they are

stated they are always discounted by the listeners:

1) A forecast of future conditions (i.e. the prediction of the magnitude, incidence and distribution of a phenomenon) is always in error. It is in error because we cannot precisely predict change; we cannot accurately predict change because

   a) Although the seeds of many changes are now present, we cannot tell which will flower;

   b) There are seeds of change which themselves have yet to be sown but which may develop extremely quickly;

   c) Our definition even of the present and the past is imprecise because of the quality and type of statistical data with which we work; and

   d) Even if we had better data we are too ignorant of the systems under study (in this case the educational system and the society which it serves) to understand what the data represent and what the relationships are.

2) Forecasting is generally a "conservative" activity. One starts with a time series of past data, makes assumptions about relationships and trends, and extrapolates these into the future. Under-prediction of change is much more common than over-prediction.

To quote from a speech about educational costs in the decade 1968 - 1978, which I made in November 1968 at a conference of the Canadian Tax Foundation:

> "The first step in a planning process is the forecast of conditions and relationships based on a documentation of the present and a study of the past. To be usefully manipulated these forecasts must be expressed numerically. The relationships forecast are generally of two types-- an extrapolation of identifiable direct-link trends, or a statement of the relationship of one or more phenomenon indirectely linked with the condition under study. In the first the future quantity is treated as a function of time. In the second the relationship between the forecast phenomenon and the conditions under study is indirect and operates through a set of time-linked variables.

Forecasting becomes prediction to the degree that the author is prepared to assume constancy (or make statements about expected changes) in the historical relationship upon which the forecast rests. Long-range forecasts (10 or more years) are, or course, fraught with danger and error.

Why then does the planner engage in them? Or rather, why does theplanner make public his/her forecasts knowing that many people will regard them, and use them, as predictions? Part of the explanation, I suppose, is that we enjoy making predictions. When we find our figures are close to reality, we tout them to our colleagues as evidence of our perspicacity. When we are grossly wrong we can always find the explanation in a radical unforseen change not provided for in our assumptions. But the educational planner's need to prepare long range forecasts is endemic to the job. The production process for which he/she is planning is of long term. In our society we provide for at least 10 years of compulsory full-time general education (i.e. the legal school leaving age is 16 years and the legally required entry age is 6). But the mass education implied by such legislation goes far beyond this. It takes about 13 years to produce a qualified tradesman, about 13 to 15 years to produce a technician or a technologist and about 16-20 years to produce a professional.

> The public sector has responsibility for a large number of such long-term production processes. If they are to be managed efficiently the commitment of today's resources must be related to the demand for the future product. Planning to meet anticipated demand is an important part of planning. The educational planner must try to anticipate and reconcile the choices of students and their parents and the needs of that future society and its economy. He therefore makes forecasts--of enrollment, of personnel and plant needs, of entry, flow and exit numbers (or in traditional educational terms of admission and promotions policy) of revenues, of costs, of manpower requirements. When the data is bad or the ignorance of related factors is great and the need for some sort of numbers is high,he/she even makes predictions.

But this paper is not merely about specifying future educational needs, it is about trying to undertake such a task in a changing political climate. The constraint represented by the latter phrase is peculiarly evident to an educational planner today--more so than it would have been five years ago, for example, or even in 1968 when I gave that speech. So although I intended to speak about "needs" for the next ten years, and I shall refer to a set of tables which forecast some of the needs (tables which are

contained in copies of my speech and which are also available at your seats so you can refer to them if you wish) first I wish to discuss some implications for the planner of the phrase "in changing political climate".

The planner, when he starts to prepare a set of projection tables for the educational decision-maker, works within a political and educational philosophy which is very real and is well understood by all concerned even though it seems to be vague and is certainly difficult to express. It is, in fact, sufficiently general to enable considerable inconsistency and variance to live happily together with outward harmony. Thus if you consult a group of educators you will find much agreement on the "aims" of education and the "aims" of the educational systems and institutions which they direct. On the level of gross generality, of grandiose philosophical statements, after some discussion, they will be able to come up with a text which all can reasonably accept as a statement of "aims and objectives". If you gather together a group of politicians who are responsible for making educational decisions, even when they are from different competing political parties you will, after some effort, be able to define the "aims and objectives" of education in such a manner that none would object to signing the statement.

With the group of politicians you might arrive at your final statement more quickly if you start formulating it negatively--it is easier to say what the intention is not, than what it is; in the same way as we find it less difficult to say when a person is not well- i.e. when a person is ill, than to pronounce him well. For example, few public figures would find it difficult to agree with the statement that"it is not the purpose of the elementary sector of schooling to train specialists, it is rather the aim to provide children with basic literacy and numeracy, the ability to read, to write and speak their

mother tongue correctly, fluently and with some elegance and the ability to think in quantitative terms, recognize mathematical relationships and perform certain computations with understanding, accuracy and some speed".

But the planner cannot work with general statements of intent. He needs precise operational definitions and specific numbers. Even so, with some work, diplomacy and tact he can arrive at a satisfactory statement of "aims". One way of doing this is to map the present and the past, defining statistically the operation of the system under study. To the decision maker then he can take this description and say, in effect, "However you formulate your "aims" this is what in fact you are doing in the system for which you are responsible. Is this what you intend? Moreover, if you go on the way you are, assuming that this condition in the economy continues as it seems to be developing (or this condition in the society, or among population or however else you wish to recognize phenomena) this is likely to occur in your educational system ten years hence. Is that acceptable to you?"

In the resulting dialogue between the planner and the educational decision-maker the operational "aims" are defined and, moreover, the planning tolerance comes to be recognized. For example, it is not enough to say to the Minister of Education, as in effect in 1964 the Grade 13 Committee did, that by 1970 there probably would be 45,200 students in Grade 13 in Ontario (based on Dr. Jackson's prediction; there were in fact 48,173 in 1970/71) and so the central examination system must be changed, because apart from all the other criticisms levelled against the system it is expensive, it is unwieldy and it is breaking down under the sheer weight of numbers far greater than it was ever expected to serve. It was not enough, in 1963, to demonstrate this condition statistically to authorities who already knew the situation. Once the possibility of change was faced, the planner then had to try to predict:

a) What would be the effect on the academic standards of Grade 13 of destroying the examination system;

b) How the allocation and selection system for the transition from secondary school to university might use other tools(such as standardized tests or school marks);

c) What some of the resultant problems might be and how they could be averted;

d) How the student"flow" from grade 12 to grade 13 might be affected;

e) How this might involve a changed distribution of teaching manpower (particularly among subjects);

f) How this might affect costs;

etc etc.

These predictions, which are to illustrate alternative feasible reform decisions, must be within a given social, political and economic context but even as they are being formulated the context is changing. And the reform to be implemented may take years to complete, certainly its repercussions will be felt for many years. And however careful the planning they cannot all be anticipated, and used or nullified.

What passes, in our society, for "commonsense" or public general knowledge is constantly changing and no where is it in a greater state of flux than in education. For example: when my children were young, mothers were strongly advised not to try to teach their pre-schoolers to read. Now television programs like Sesame Street and do-it-yourself books make every parent a reading specialist. We once thought the "proper age" to start reading was some where around six years, some psychologists now talk about teaching infants and toddlers. The reading controversy, which waxed hot about 6 years ago in Ontario, of the phonetic method vs. the look/see method (not primarily a

controversy, between reading specialists let me add, and nowhere did argument rage so violently as in coffee klatches and Home and School meetings) has now given way to the new initial teaching alphabet and individualized instruction, which admonishes that each child learns in a unique fashion, at a unique speed so that any "system" which is successful is the best system for him.

Well, you might argue, this type of pedagogical issue has always been with us. Wherein does it make predictions more or less difficult and wherein are changing political interpretations now placed on the predictions? Let us take this reading case-- if the expectation is that all children above a certain level of learning aptitude should read to a certain level of efficiency by, let us say, approximately their 10th year of age, this can be accomplished in many ways: (a) you could argue that improved teaching is necessary and require all present teachers of grades 1-4 to take special instruction; (b)you could decide not to try to directly improve the teacher force, but require all new entrants to teaching,starting next year,to have specialist reading qualifications if they wished to seek employment in grades 1-4 (thus upgrading the teacher force over a period of years according to the expected turnover rates);(c) you could leave the qualifications of the ordinary classroom teacher unchanged but provide special materials or special advisory personnel for her assistance;(d) you could leave the present teachers and the course of study unchanged but provide the pupil with greater reading"exposure"by assigning half the time of each day to reading instruction or halving the pupil/teacher ratio for reading periods, or withdrawing the children for short periods of individual reading instruction, or...I could go on suggesting

other changes which might achieve the same purpose. The point I wish to make is that each such "production change" will have a different cost, will vary in terms of needed introduction conditions and lead time, and not least among the costs to be assessed are the "political costs" involved. In general, one might say that the "political cost" of a change is in direct relation to the amount of "disturbance" it will create, the nature of the disturbance, its timing, and its incidence. It is very difficult to mount strong statistical evidence predicting an even greater cost if reform is delayed, to persuade a political authority to effect a long term change which will begin to bear fruit only ten years hence but which has high immediate disturbance costs. By the time the benefits are reaped some other Minister or some other Board will gather in the political reward, but when the disturbance occurs this Minister or this Board will shoulder the political risk it represents.

At any point in time there are many public issues to be decided by public authorities. Governments cannot possibly tackle all policy questions at once. There is a sort of natural rhythm of development of an issue, and its importance can be recognized long before it becomes a common place topic for discussion. Part of the planner's work, as predictor, is to try to keep ahead of the game on behalf of the decision-maker to whom he is offering advice. One definition of a reliable projection is "A set of numbers which recognize and advocate the inevitable". The planner, therefore, has an important role as predictor--not simply as predictor of parameters and characteristics, (i.e. the traditional prediction of numbers of student clients, types of teachers, types of buildings, plant, equipment, materials, costs) but as predictor of the changing constraints, (i.e. predictor of the

changing myths and common-sense of educational policy and public policy).

In 1965 when the second report of the Economic Council of Canada was issued a great cry was raised encouraging "investment" in educat[illegible] not as a public good, or a moral right, or a personal fulfilment but as an economic good to create economic growth, to develop wealth. In the cost b[illegible]fit studies, the benefits of education were oversold. But the ensuing [illegible]ears were ones of affluence, high employment, rising productivity, inflation and rising public wealth. Because of the postwar baby boom and massive immigration, educational systems had to be expanded anyway. With, in addition the mystique of social mobility through education and high earnings as the reward for high skills attested by formal education, the demand for places in educational institutions grew considerably beyond what might have been expected merely from population growth. The public investment of expanding the numbers of places in secondary schools and universities and colleges might have been made anyway. It might have been made under slogans of moral and personal "right". The fact that frequently it was justified by economic arguments of one sort and another neither makes those arguments right nor wrong, neither justifies the investment nor makes it a great mistake.

When the Ontario Minister of Education announced the creation of the CAAT system in the legislature in 1965 he justified it in manpower terms. "In this new age of technological change and invention, also, it is essential to the continued growth and expansion of the economy of our province, and, I suggest, of our nation, that adequate facilities be made generally available for the education and training of craftsmen, technicians and technologists...."[1] There was at that time a shortage of technical personnel

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[1] Basic Documents, p. 5.

There had been for some years. Increasingly it was becoming difficult to buy these skills abroad by enticing trained immigrants to Canada. There was full employment in their own countries--particularly in the nations of north western Europe (Britain, the Netherlands, Germany, Scandinavia) which traditionally had supplied us with skilled and technical manpower. But the CAAT system need not have been "sold" in manpower terms. It could just as well have been sold in social terms. But if there had been serious unemployment in 1967 one could well have justified the creation of the CAAT system by the following hypothetical argument:

a) In 1965 after three years of the Robarts Plan's reorganization there was a cohort of 55,516 students finishing Grade 12 of Ontario's secondary schools. Only 75.9 % of them were expected to enter grade 13.

b) This flow was expected to swell in the next five years to 67,605, 69,844, 76,135, 80,684, and 86,744. (Here I'm quoting a prediction of the Division of Educational Planning made in 1966 which might well have been used at that time--the actual Grade 12 figures of these years proved to be higher 70,625 in 1966 and 75,214, 82,371, 90,956, 98,837 thereafter). Absorbing this flow directly on the labour market would necessitate the creation of 42,234 new jobs the first year, 45,801 the second, 42,751 the third, 41,658 the fourth, 44,477 the fifth. With the then (1967) high unemployment rates it was unlikely the governments (federal and provincial) could stimulate the economy sufficiently quickly to create so many new jobs so that the already high youthful unemployment rate would likely be augmented.

c) One way of cooling off this youthful demand for jobs (an alternative form of unemployment insurance or welfare payment, if you like) would be to direct the student flow into a new set of tertiary level institutions

and encourage youth to study relevant and vocationally useful programs. This would enhance their employability when they did hit the labour mar a few years hence and would give government two or three years additional lead time (depending on the length of program) in which to try to enhance the capacity of the economy to absorb this labour.

Thus the same educational policy decision, the same level of "investment" of public funds, could have been justified by two directly opposite sets of arguments--both of which might well be true depending on the circumstances. One set of arguments would be appropriate in circumstances of acute labour shortage, another in circumstances of labour surplus. The problem is that the predictions specifying what is "needed" in educational policy (expressed in this case in numbers of technically qualified graduates occupationally defined) have to be made at one point in time, under one set of circumstances, but for a fairly long number of years ahead. Reasonable, even excellent, policy decisions based on such predictions can look reprehensible (or at best silly or deplorable) a few years later. It is the task of the planner to provide the predictions and make policy recommendations in such a way as to make allowance for changed conditions and provide for revision of the planned change without too much political cost.

In years of rapid change of public attitudes it is very easy for one year's political "meat" (or maybe "gravy" would be a better term) to turn into the next years political poison. This is what is now happening in Ontario. The very achievements in educational reform and expansion, which once Mr. Davis could count upon as major political assets, now hang like an albatross about his neck in our "new" concern about educational costs.

Between 1960 and 1970 under his regime as Minister and that of his predecessor Mr. Robarts (Mr. Davis became Minister on October 25, 1962) the survival ratio from grade 10 to grade 11 of the public secondary schools of the province as a whole rose from 80.9 to 90.5, for metro it rose from 81.6 to 100.0. During this decade the survival ratio from grades 11 to 12 in metro rose from 89.3 to 94.2. The improvement in completion rates which these figures represent was effected at a time when larger age cohorts were travelling through the secondary school, anyway, because of population growth. This was a remarkable achievement but it was also an expensive achievement. When you push mass educational participation beyond the elementary level into the secondary school level you agree to provide a very expensive public service. There is no way it can be cheaply provided unless (a) its standards are so devalued that the old and the new cannot be compared, so that the new mass service is in fact a lesser service; or (b) such radical educational process changes are effected that very great unit production savings can take place. In the example quoted, the latter would involve the transfer of the responsibility for teaching away from a labour intensive process which uses large numbers of expensive teachers to one using other cheaper teaching/learning tools. But, unfortunately, with the exception of the traditional book, at present all the known substitutes for human teachers are expensive, and moreover by themselves they are ineffective. So far, they have been effective only when supplementing the human teacher--so they increase instead of reducing costs. An alternative process change intended to reduce costs might be to throw the responsibility for learning almost entirely upon the student and provide

expensive teachers only sparingly for a learning consultation/diagnostic role rather than a specific instruction role. Unfortunately we don't know how to do this successfully, not with the mass of students we now serve with secondary schooling.

Let us look for a minute at what such a transformation of the secondary school means in pedagogical terms. Traditional secondary schools took the basic literacy and numeracy teaching of the elementary school and developed it academically. Adolescents were introduced to their literary and historical heritage, they were taught the beginnings of mathematical symbolic logic, they learned something of the fine arts and the performing arts, they were introduced to classical languages and literature and to the modern languages and literature of western Europe (particularly of France and Germany) and they began the study of the physical sciences. These schools catered to a very small number of working class children of high learning aptitude and the main stream of middle class children whose family conditioning and background had made them achievement-prone and easy to teach academic subjects.

The reform of the secondary school in the 1950's and 1960's transformed these academic high schools into institutions teaching a wide variety of theoretical and "practical" studies--the latter intended to reinforce and complement the former--on many more "levels of difficulty" than was previously the case, and to adolescents from homes which were representative of the whole community. These youths do not necessarily come from "bookish" families. They have not been conditioned to value academic achievement. Some will achieve as well as the middle class children who were the clients of the old schools, but not necessarily in the same areas of study, at the

same speed, and under the same conditions. In fact, of course, this differentiated process of secondary level schooling is more expensive than the old academic programs. And so the actual success of the reform has created political risk because the degree of success is directly related to the degree of expenditura, and the expenditure has become so considerable as to be widely criticized.

But there is on prediction which I can make without fear of error and without contradiction: there is no way in which the social demand for formal education can be quickly dampened in Ontario in order to rapidly reduce educational expenditure, and there is no way educational process can be quickly and easily improved so as to dramatically reduce educational costs. To suggest otherwise is a fraud.

That is not to say that reforms cannot be made in methods of financing educational services so as to spread the financial burden more equitably. Nor is it to say that management reforms cannot be expected which will improve the "productivity" of educational institutions by requiring them to raise their standards of administration. But these topics I shall leave to Dr. Stager who is to give the next paper this afternoon.

What I am saying is that for better or for worse we have created a thirst for formal study. (I will not say "education" because that English word is fraught with overtones of "self fulfilment" and "regeneration" in addition to intellectual learning). The thirst for schooling satisfies many desires--ambition for higher earnings, ambition for social prestige, curiosity and inquiry, entertainment and recreation--and it feeds on itself. It is the well educated and the ambitious parent who demands longer formal training for his children. The more youths you provide with secondary level schooling, the more candidates you will have at the doors of your universities. Every Director of Extension or of Adult Education knows that with every course

successfully completed there is an increased probability that the student will return for more courses. And the reverse is also true, every teacher engaged in Manpower Retraining Programs is aware that you cannot easily teach a worker new skills if he lacks a certain basic level of knowledge in language and mathematics, if he lacks a certain attitude which can best be described as the confidence that one can successfully learn something because in the past, one has already had the experience of successfully learning many things.

Before I direct your attention to the tables of projections which are provided, let me summarize what I have been trying to say about specifying future educational needs in a changing political climate such as we are experiencing today in Ontario:

1) All attempts to specify the future involve error and hence risk;

2) Nevertheless predictions must be made because the complexity of public policy decisions for educational service make the ad hoc decisions to solve immediate problems dysfunctional in that they create unforseen new difficulties as they try to cope with old difficulties. Policy making in the public sector has become so interrelated--educational decisions affecting, and being affected, by immigration decisions, welfare decisions, financial decisions etc. etc.--that it is no longer possible to keep the forest from burning by spitting on the bush fires.

3) The planner when specifying future needs is engaged in an essentially conservative task. He must recognize the limitations of his work. He takes as given a whole set of process conditions which are changing. He takes as given a series of public attitudes, myths and assumptions which are changing. He must try to anticipate changing constraints imposed on the educational system by its society, particularly by its political climate, so that in minimizing present risk for the educational decision maker he does not thereby increase future risk.

Now, for a few minutes, let me speak of future (1980/81) numbers and conditions:

Education is a service to people. Its volume may be related directly to population size. Table I shows Ontario's predicted population by age groups. Note the continued drop in absolute numbers in the age group 5-13. This has been taking place since 1969 and is expected to continue until 1981. It will directly affect the elementary sector of the system (but we shall speak of enrollment presently). Note the continued absolute increase in the age group 14-18 which is the clientele for the secondary school sector[2], but the rate of increase drops sharply after 1970 and in absolute numbers there is decrease after 1978 The age group 18-21 is the reference group for undergraduate university studies, 18-24 if graduate and professional studies are included, 18-19 if one is discussing CAAT programs. These age groupings refer to direct youth flow at "normal progress" speed into what is referred to as the tertiary sector. For the next decade these are the age groups of continuous absolute increase.

The next group of tables contains enrollment projections. These are "demand for places" estimates based on student flows through the lower schools and survival trends in these lower systems (and in the tertiary institutions themselves) which are the result of educational selection, admissions and promotions policies and of public expectations. I have assumed that no dramatic change in public policy will take place. To be specific my estimates assume no sudden cut back in educational spending, for the simple reason that in my opinion, no Ontario government would "get away with" a dramatic cut back. It will be possible to shift spending from one sector to another (e.g. to spend more on the CAAT system

[2] 14 - 17 if we consider grades 9 to 12; 14 to 18 if we include Grade 13.

and less on the university system; or to offset an expected reduction in elementary expenditure by providing for an expanded pre-school service). It will be possible to restrict the rate of growth in per capita costs by a variety of restrictive ceilings. But the enrollment figures shown here are, if anything, an under-prediction so there is no way in which total educational spending will sharply drop.

Tables 2 and 3 deal with the elementary school sector. This publicly-funded service already covers all the age group except for a very small number of children in private schools, hospital schools etc. The pre-school enrollment figures of tables 4 and 5 assume, by 1980, the provision of senior kindergarten service will be constrained only by geographical distance--i.e. difficulty of attendance. In 1970 these classes served 91.4% of the 5 year olds of Ontario. This estimate provides for 99.0% coverage by 1980 and a publicly funded junior kindergarten service to some 57.3% of the 4 year olds.

The percentage growth in secondary school enrollment in Ontario since 1955 has been quite unprecedented. In the next ten years absolute growth in numbers is also expected to be considerable, but further increase in participation rates is minimal (see Tables 6 and 7). In 1956 enrollment in grades 9 to 13 represented 52.3% of the age group 14 - 18 in the province; in 1970 it was equal to 78.3%, in 1980 it is expected to equal 82.1%. Absolute growth in enrollment over the decade 1970-1980 is expected to be some 111,605 (i.e. the expected 1980 figure will be 20% higher than that of 1970). These figures exclude approximately 18,822 students who, in 1970/71, attended grades 9 and 10 of the publicly supported separate schools. If the current demands for public support for Roman Catholic

students in private secondary schools, or for all students in private secondary schools (whether denominational or not) are acceded to, these enrollment figures will, of course, be much higher.

Projecting enrollment at the tertiary level is more tricky: possible choices of program and institution are greater, the student numbers are influenced by a large number of variables and may be manipulated by policy decisions made at the provincial level or by the individual institution. Tables 8-12 show three projections of undergraduate enrollment and one projection of graduate enrollment published by OISE in 1968. Unfortunately the revision of these projections is not yet complete so these are the most recent figures which I can quote at present. For 1981 the estimated number of undergraduates in all Ontario universities (not only those which are publicly assisted) ranges from 181,598 to 232,118 depending upon the assumptions of growth. The estimated number of graduate students for 1981 varies from 47,144 to 35,919. The first figure assumes continuation of the rapid growth trend in enrollment in which we have recently experienced, the second assumes a considerable curb on the trend produced by restrictions on student aid and total university operating funds. The latter now seems more realistic, in fact it probably is too high. But there is a limit to how quickly enrollment growth can be curbed. The growth in numbers of university students obviously is extremely sensitive to the expansion of the secondary school sector which has been successfully carried out. Enrollment in graduate schools cannot quickly be stabilized if growing cohorts of undergraduates are flowing through the system--particularly if the employment situation is poor and many decide to continue their studies

because they cannot find jobs. In such a situation, admission selection will become more rigorous.

University enrollment is also closely linked with the provision of other types of post-secondary educational service. In Ontario we now have 20 Colleges of Applied Arts and Technology offering full-time study of from 1 to 3 years duration to students drawn mainly from Grade 12 of the secondary schools. They also have responsibility for a great deal of part-time and full-time training of adults, manpower retraining, professional upgrading, and general adult education whose extent is difficult to gauge. Projections of full-time and enrollment in this sector.
the next decade are to be found in Tables 13 and 14. Table 13 shows a full time CAAT enrollment of 76,077 by 1981, more than three times the 1969 figure. This would be a service to the equivalent of 11% of the estimated age group 18-21. Table 14 shows projected full time first year CAAT enrollment as drawn from various flow sources- grades 12, 13, mature students, foreign students etc.

Tables 15 and 16 show projections of the number of elementary and secondary teachers needed to provide educational service to the expected number of pupils. These figures have been calculated using various assumptions about movement in the pupil/teacher ratio. This is the overall pupil/professional educator ratio which is negotiated each year with Boards of Education and which decides the size of the educational labour force. The "teacher" figures include vice principals, principals and relief teachers at the level of the school and consultant curriculum and resource personnel at the Board level but not what might be term "senior administration" and not advisory services such as librarians, psychologists and

psychometricians or social workers, attendance officers etc.

Table 17 gives a projection of the estimated number of special education teachers needed given various assumptions about the provision of their educational service, for which at present there is a considerable pent-up demand based on inadequate past provision of service outside the big urban centres.

A word of explanation about tables 15 and 16:

Projection 1 of Table 15 assumes a stable pupil/teacher ratio at the 1969-70 level. Projection 2 assumes that the ratio will decline 0.9 per year to 18.0 by 1978, and stabilize thereafter. Projections 3, 4 and 5 offer three targets with (a) and (b) parts reflecting the different manner in which each target is reached. In my opinion projection 4 is realistic for the last half of the projection period, although for the next few years the ratio might be held steady (projection 1) because of concern about educational costs.

In Table 16, projection 1 assumes a stable ratio at the 1970 level. Projection 2 assumes an annual decrease to a ratio of 16.0 in 1973 which will stabilize thereafter. Projection 3 assumes an annual decrease to a ratio of 15.5 by 1980. Projection 4 assumes an annual decrease to 14.3 in 1981. In projection 5 the ratio is held stable until 1978 and then allowed to decrease slightly. And projection 6 provides for a slight increase in the ratio to 17.1 in 1972 and held stable thereafter.

The number of Special Education teachers required for special education in the elementary school sector was derived from three projections of the number of special education pupils. Projection A assumes that by 1981 12.95 percent of the age group 5-14 will be special education pupils. Projection B assumes that by 1981 9.97 percent of the age group 5-14 will be special

education pupils. Projection C is based on past trend of special education enrollment as a percent of age group 5-14. (See Table 17).

Conclusion:

In trying to specify future educational needs in Ontario at this time there are some problems beyond those which the educational planner always faces. The question "How much should we spend on education?" is a political question. It's obviously related to how affluent our society is when the question is being answered. If our economy is growing there will be less constraint on our public resources. There are many demands on the public dollar and some expenditures (such as an attempt to control pollution) are rising in popularity at this time. That is not to say that expenditure on education is unpopular in an absolute sense - we have always exhibited a great public concern for education - but the public is asking some sharp questions about the continued rate of increase in costs, about the efficient management of the service and the value for money on the investment. For some years there will be a growing demand for places at the educational institutions of the tertiary level and this service is the most expensive which we provide, so inevitably we shall have to face the question of numbers and we shall have to try to predict part-time study, particularly at the universities and CAATs. How much of the expected volume of enrollment can be diverted to part-time study? What economy would we achieve in the year round use of plant? How many of the anticipated numbers of students can be accommodated in the same educational plant with more intensive use of premises by lengthening the "day", the "week" and the "year"? How many of the anticipated numbers of students can be trained with the same staff, using the same premises, by staggering study/work experiences in "sandwich" programs? What process changes can be realized quickly enough

for general implementation in the next decade, which would enable us to process larger numbers of students for the same costs? When will we begin to get a pay-off from our investments in ETV, computer monitored instruction, and programmed learning? How quickly can we develop a process of individualized learning which would make a great many teachers unnecessary? (i.e. which would enable them to teach many more students with the same labour force. This seems to be particularly hopeful at the tertiary level). How quickly can we differentiate the teaching force in all sectors so that there is a hierarchy of teaching skills from very highly trained experienced "master teachers" and professor/scholars to a number of kinds of teaching assistants and teaching aides, many of whom might well be students themselves. This would be one way of reducing total costs, particularly at the secondary level.

TABLE 1

ONTARIO POPULATION ESTIMATES BY AGE GROUP

(in hundreds)

Age Group	1961[a]	1966[a]	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
5-13	1,161.3	1,332.4	1,428.7	1,411.1	1,385.6	1,357.4	1,329.6	1,308.7	1,289.6	1,277.6	1,273.1	1,285.5	1,311.2
14-18	463.2	602.5	734.9	758.7	780.4	799.5	815.1	823.9	832.0	834.2	831.1	814.1	790.2
18-21	316.7	444.9	545.6	560.4	575.9	593.7	612.6	631.1	647.7	661.8	672.6	677.8	682.7
18-24	548.6	727.4	934.8	963.5	989.6	1,016.5	1,044.5	1,073.5	1,102.8	1,131.2	1,156.6	1,175.3	1,191.6
19-21	235.0	325.2	406.4	416.7	427.2	439.9	454.2	468.9	482.4	494.0	503.3	510.5	512.4
19-24	466.9	607.7	795.6	819.8	840.9	862.7	886.1	911.3	937.5	963.4	987.3	1,008.0	1,021.3

[a] Actual figures

Source: Canada, Dominion Bureau of Statistics, Population Division,
1961 Census of Canada, Catalogue No. 92-543, Vol. 1, Part 2 (Queen's Printer; Nov. 21, 1962)
1966 Census of Canada, Catalogue No. 92-611, Vol. 1, (1-11) (Queen's Printer; January 1968)

Ontario, Department of Treasury and Economics, Policy Planning Division, Economic Planning Branch, Ontario Short-Term Population Projections, 1970-1981, September 1970.

TABLE 4

Ontario Elementary (Public and Separate) School Enrollment

Year	Estimated Enrollment grades 1 to 8 and auxiliary classes	Difference	% Increase or Decrease
1971	1,296,556		
1972	1,285,984	-10,572	- 8.2
1973	1,264,995	-20,989	-16.3
1974	1,237,016	-27,979	-22.1
1975	1,208,180	-28,836	-23.3
1976	1,182,183	-25,997	-21.5
1977	1,163,021	-19,162	-16.2
1978	1,151,334	-11,687	-10.0
1979	1,145,821	- 5,513	- .5
1980	1,155,798	+ 9,977	+ 8.7
1981	1,178,207	+22,409	+19.4

TABLE 5

Ontario Elementary (Public and Separate) School Enrollment

Year	Estimated Enrollment grades 1 to 8 and auxiliary classes	Age Group 5-13 (in hundreds)	Enrollment as a % of Age Group
1971	1,296,556	1,428.7	90.7
1972	1,285,984	1,411.1	91.1
1973	1,264,995	1,385.6	91.3
1974	1,237,016	1,357.4	91.1
1975	1,208,180	1,329.6	90.9
1976	1,182,183	1,308.7	90.3
1977	1,163,021	1,289.6	90.2
1978	1,151,334	1,277.6	90.1
1979	1,145,821	1,273.1	90.0
1980	1,155,798	1,285.5	89.9
1981	1,178,207	1,311.2	89.9

TABLE 4

rio Pre-School (Junior and Senior

Kindergarten) Enrollment

Year	mated llment	Difference	% Increase or Decrease
1971	740		
1972	800	+ 3,060	+ 2.0
1973	260	+ 6,460	+ 4.2
1974	540	+ 8,280	+ 5.2
1975	,700	+11,160	+ 6.7
1976	,400	+11,700	+ 6.5
1977	,000	+13,600	+ 7.1
1978	7,700	+13,700	+ 6.7
1979	1,400	+13,700	+ 6.3
1980	245,400	+14,000	+ 6.1
1981	258,700	+13,300	+ 5.4

TABLE 5

Ontario Pre-School (Junior and Senior

Kindergarten) Enrollment

Year	Estimated Enrollment	Age Group 4 and 5 Years (in hundreds)	Enrollment as a % of Age Group
1971	149,740	276.5	54.1
1972	152,800	264.5	57.8
1973	159,260	260.7	61.1
1974	167,540	262.2	63.9
1975	178,700	269.1	66.4
1976	190,400	278.7	68.3
1977	204,000	287.8	70.9
1978	217,700	296.9	73.3
1979	,400	305.9	75.6
1980	,400	315.0	77.9
1981	,700	324.0	79.8

TABLE 6

Ontario Secondary School Enrollment

Year	Estimated Enrollment (Grades 9 to 13)	Difference	% Increase or Decrease
1971	580,568		
1972	603,206	+ 22,638	+ 3.9
1973	624,474	+ 21,268	+ 3.5
1974	646,014	+ 21,540	+ 3.4
1975	663,497	+ 17,483	+ 2.7
1976	675,306	+ 11,809	+ 1.8
1977	681,109	+ 5,803	+ .9
1978	683,390	+ 2,281	+ .3
1979	682,304	- 1,086	- .2
1980	668,518	- 13,786	- 2.0
1981	646,372	- 22,146	- 3.3

TABLE 7

Ontario Secondary School Enrollment

Year	Estimated Enrollment (Grades 9 to 13)	Age Group 14-18 (in hundreds)	Enrollment as a % of Age Group
1971	580,568	734.9	79.0
1972	603,206	758.7	79.5
1973	624,474	780.4	80.0
1974	646,014	799.5	80.8
1975	663,497	815.1	81.4
1976	675,306	823.9	82.0
1977	681,109	832.0	81.9
1978	683,390	834.2	81.9
1979	682,304	831.1	82.1
1980	668,518	814.1	82.1
1981	646,372	790.2	81.8

TABLE 9

UNDERGRADUATE ENROLLMENT

(Based on trend of past 5 years full-time undergraduate enrollment as a proportion of 18-21 age group)

Academic Year beginning September	18-21 Age Group [a]	Full-time Undergraduate Enrollment	Enrollment as a % of 18-21 Age Group
1971	545.6	106,392	19.50
1972	560.4	114,322	20.40
1973	575.9	122,667	21.30
1974	593.7	131,801	22.20
1975	612.6	141,511	23.10
1976	631.1	151,464	24.00
1977	647.7	161,277	24.90
1978	661.8	170,744	25.80
1979	672.6	179,584	26.70
1980	677.8	187,073	27.60
1981	682.7	194,570	28.50

[a]Source: Ontario Population Projections 1970-1981
Economic Planning Branch, Policy Planning Division,
Department of Treasury and Economics, September, 1970.

TABLE 10

UNDERGRADUATE ENROLLMENT

Academic Year beginning September	18-21 Age Group	Full-time Undergraduate Enrollment	Enrollment as a % of 18-21 Age Group
1971	545.6	109,120	20.00
1972	560.4	119,926	21,40
1973	575.9	131,305	22.80
1974	593.7	143,675	24.20
1975	612.6	156,826	25.60
1976	631.1	170,397	27.00
1977	647.7	183.947	28.40
1978	661.8	197,216	29.80
1979	672.6	209,851	31.20
1980	677.8	220.963	32.60
1981	682.7	232,118	34.00

TABLE 11

UNDERGRADUATE ENROLLMENT

(Based on trend of past 7 years full-time undergraduate enrollment as a proportion of 18-21 age group)

Academic Year beginning September	18-21 Age Group	Full-time Undergraduate Enrollment	Enrollment as a % of 18-21 Age Group
1971	545.6	105;301	19.30
1972	560.4	112,080	20.00
1973	575.9	119,211	20.70
1974	593.7	127,052	21.40
1975	612.6	135,997	22.20
1976	631.1	150,833	23.90
1977	647.7	152,857	23.60
1978	661.8	161,479	24.40
1979	672.6	168,823	25.10
1980	677.8	175,550	25.90
1981	682.7	181,598	26.60

TABLE 12

GRADUATE ENROLLMENT

(Based on assumption that graduate enrollment will grow to 16.05 per cent of total enrollment by 1981)

Academic Year beginning September	Total University Enrollment	Graduate Enrollment	Graduate Enrollment as a % of Total Enrollment
1971	131,620	19,743	15.0
1972	143,370	21,792	15.2
1973	154,670	23,819	15.4
1974	164,980	25,737	15.6
1975	174.760	27,612	15.8
1976	183,891	29,423	16.0
1977	192,990	30,878	16.0
1978	201,919	32,307	16.0
1979	210,501	33,680	16.0
1980	218,018	34,883	16.0
1981	224,494	35,919	16.0

Table 13

Full-Time Total Enrollment CAATs in Ontario as a Percent of Age Group 18-21
(Actual 1967 to 1969 & Projected to 1981-82)

Full-Time Total Enrollment Projection No. 3

	Academic Year Beginning	Enrollment Col. I	Population age-group 18-21 (in 000) (1) Col. II	Enrollment as a % of population of age groups 18-21 Col. III	Relative Increase in Col. III 1967 = 100 Col. IV
A	1967	11,266	461.5	2.4225	100.00
C	1968	19,040	487.2	3.9124	161.5
T	1969	24,421	508.4	4.8035	198.23
U	1970	30,708	530.4	5.7896	238.99
A	1971	34,629	545.6	6 3470	262.00
L	1972	38,962	560.4	6.9526	287.00
P	1973	43,109	575.9	7.4855	309.00
R	1974	47,318	593.7	7.9700	329.00
O	1975	51,718	612.6	8.4424	348.5
J	1976	56,185	631.1	8.9027	367.5
E	1977	60,566	647.7	9.3509	386.0
C	1978	64,850	661.8	9.7990	404.5
T	1979	68,983	672.6	10.2472	423.0
E	1980	72,493	677.8	10.6953	441.5
D	1981	76,077	682.0	11.1435	460.0

(1) Source: Ontario Short-Term Population Projections, 1969-1980, Economic Planning Branch, Policy Planning Division, Department of Treasury and Economics, September, 1970.

TABLE 14

FULL TIME FIRST YEAR PAST AND PROJECTED CAAT
ENROLLMENT IN ONTARIO
DISTRIBUTION BY SOURCE

(First Year Enrollment - Projection No. 1)

End of October Year	From Grade 12 Graduates 1	Grade 13 Full or Part 2	Total of 1 and 2 3	Mature* Students 22 Yrs & Over 4	Students From Canada Outside of Ontario 5	Foreign Students ... 6	First Year Total 7
1967	5,816 81.7 70.5	1,396 19.4 16.9	7,211 100.0 (1) 88.14(2)	889 10.8	66 0.8	82 1.0	8,249 100.0
1968	8,882 84.6 72.0	1,623 15.4 13.2	10,505 100.0 86.27	1,482 12.0	160 1.3	183 1.5	12,330 100.0
1969	10,548 86.4 71.7	1,661 13.6 11.3	12,210 100.0 82.9	1,913 13.0	274 1.9	320 2.2	14,717 100.0
1970	12,305 86.5 71.1	1,917 13.5 11.1	14,222 100.0 82.2	2,336 13.5	346 2.0	398 2.3	17,302 100.0
1971	14,584 86.1 70.3	2,360 13.9 11.4	16,944 100.0 81.7	2,862 13.8	435 2.1	498 2.4	20,739 100.0
1972	16,276 85.2 69.6	2,829 14.8 12.1	19,105 100.0 81.7	3,180 13.6	514 2.2	585 2.5	23,384 100.0
1973	18,079 84.8 69.3	3,250 15.2 12.4	21,329 100.0 81.7	3,498 13.4	600 2.3	679 2.6	26,106 100.0
1974	19,658 84.2 68.8	3,701 15.8 12.9	23,359 100.0 81.7	3,774 13.2	686 2.4	772 2.7	28,591 100.0
1975	21,578 84.0 68.6	4,113 16.0 13.1	25,691 100.0 81.7	4,088 13.0	786 2.5	880 2.8	31,445 100.0
1976	23,659 84.1 68.6	4,476 15.9 13.0	28,135 100.0 81.6	4,448 12.9	896 2.6	1,000 2.9	34,479 100.0
1977	25,562 84.0 68.4	4,874 16.0 13.1	30,436 100.0 81.5	4,780 12.8	1,008 2.7	1,120 3.0	37,344 100.0
1978	27,067 83.8 68.3	5,233 16.2 13.2	32,300 100.0 81.5	5,033 12.7	1,110 2.8	1,189 3.0	39,632 100.0
1979	27,797 83.2 67.8	5,626 16.8 13.7	33,423 100.0 81.5	5,167 12.6	1,189 2.9	1,230 3.0	41,009 100.0
1980	28,361 82.9 67.5	5,859 17.1 14.0	34,220 100.0 81.5	5,248 12.5	1,260 3.0	1,260 3.0	41,988 100.0
1981	28,780 82.6 67.3	6,066 17.4 14.2	34,846 100.0 81.5	5,344 12.5	1,283 3.0	1,283 3.0	42,756 100.0

TABLE 15

ESTIMATED NUMBER OF TEACHERS IN ONTARIO ELEMENTARY SCHOOLS, 1969-1981

Year	Enrollment	Projection 1	2	3	3a	3b	4	4a	4b	5	5a	5b
1969	1,437,746	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)	56,800* (25.3)
1970	1,441,151	56,962 (25.3)	59,064 (24.4)	57,646 (25.0)	56,998	58,111 (24.8)	57,878 (24.9)	57,233	58,111 (24.8)	57,878 (24.9)	57,491	58,111 (24.8)
1971	1,429,940	56,519 (25.3)	60,849 (23.5)	57,892 (24.7)	57,196	58,208	58,128 (24.6)	57,666	58,464	58,604 (24.4)	58,182	58,746
1972	1,412,590	55,834 (25.3)	62,504 (22.6)	57,657 (24.5)	57,394	58,305	58,371 (24.2)	58,099	58,817	58,858 (24.0)	58,873	59,381
1973	1,393,520	55,080 (25.3)	64,218 (21.7)	57,583 (24.2)	57,592	58,402	58,306 (23.9)	58,532	59,170	59,299 (23.5)	59,564	60,016
1974	1,369,820	54,143 (25.3)	65,857 (24.8)	57,315 (23.9)	57,790	58,499	58,290 (23.5)	58,965	59,523	59,300 (23.1)	60,255	60,651
1975	1,351,060	53,402 (25.3)	67,892 (19.9)	57,248 (23.6)	57,988	58,598	58,487 (23.1)	59,398	59,876	59,518 (22.7)	60,946	61,286
1976	1,330,270	52,580 (25.3)	70,014 (19.0)	57,093 (23.3)	58,186	58,693	58,345 (22.8)	59,851	60,229	59,922 (22.2)	61,637	61,921
1977	1,309,800	51,771 (25.3)	72,365 (18.1)	56,701 (23.1)	58,384	58,790	58,473 (22.4)	60,264	60,582	60,083 (21.8)	62,328	62,556
1978	1,293,750	51,136 (25.3)	71,875 (18.0)	56,743 (22.8)	58,582	58,887	58,541 (22.1)	60,697	60,935	60,739 (21.3)	63,019	63,191
1979	1,288,540	50,930 (25.3)	71,586 (18.0)	57,268 (22.5)	58,780	58,984	59,380 (21.7)	61,130	61,288	61,653 (20.9)	63,710	63,826
1980	1,293,710	51,135 (25.3)	71,873 (18.0)	58,275 (22.2)	58,978	59,081	60,738 (21.3)	61,563	61,641	63,103 (20.5)	64,401	64,461
1981	1,301,820	51,455 (25.3)	72,323 (18.0)	59,174 (22.0)	59,174 (22.0)	59,174 (22.0)	61,991 (21.0)	61,991 (21.0)	61,991 (21.0)	65,091 (20.0)	65,091 (20.0)	65,091 (20.0)

*Estimated figures - omitting teachers of grades 9 and 10 in the Special Elementary Schools.

ACTUAL FIGURE, 1969.

Present or projected pupil/teacher ratios are given in parenthesis.

TABLE 16

ESTIMATED NUMBER OF TEACHERS IN ONTARIO SECONDARY SCHOOLS, 1970-1981

		Enrollment	Teachers (1)	(2)	(3)	(4)	(1a)	(2a)	(3a)	(4a)	(1b)	(2b)	(3b)	(4b)	(5)	(5a)	(6)
Actual	1970	556,913	33,693 16.5														
Projected	1971	580,568	35,186 16.5	35,617 16.3	35,400 16.4	35,617 16.3	34,378 16.9	34,531 16.8	34,694 16.7	35,131 16.5	34,378 16.9	34,531 16.8	34,694 16.7	35,131 16.5	35,186 16.5	35,186 16.5	34,558 16.8
	1972	603,206	36,558 16.5	37,466 16.1	37,007 16.3	37,466 16.1	35,063 17.2	35,369 17.1	35,695 16.9	35,569 16.5	35,063 17.2	35,369 17.1	35,695 16.9	36,569 16.5	36,558 16.5	36,558 16.5	35,275 17.1
	1973	624,474	37,847 16.5	39,030 16.0	38,548 16.2	39,275 15.9	35,748 17.5	36,207 17.2	36,696 17.0	38,007 16.4	35,748 17.5	36,207 17.2	36,696 17.0	38,007 16.4	37,847 16.5	37,847 16.5	36,519 17.1
	1974	646,014	39,152 16.5	40,376 16.0	40,125 16.1	41,147 15.7	36,433 17.7	37,045 17.4	37,697 17.1	39,445 16.4	36,433 17.7	37,045 17.4	37,697 17.1	39,445 16.4	39,152 16.5	39,152 16.5	37,778 17.1
	1975	663,497	40,212 16.5	41,469 16.0	41,469 16.0	42,806 15.5	37,118 17.9	37,883 17.5	38,698 17.1	40,883 16.2	37,118 17.9	37,883 17.5	38,698 17.1	40,883 16.2	40,212 16.5	40,212 16.5	38,801 17.1
	1976	675,306	40,928 16.5	42,207 16.0	42,472 15.9	44,138 15.3	37,803 17.9	38,721 17.4	39,699 17.0	42,321 16.0	37,803 17.9	38,721 17.4	39,699 17.0	42,321 16.0	40,928 16.5	40,928 16.5	39,491 17.1
	1977	681,109	41,279 16.5	42,569 16.0	43,108 15.8	45,107 15.1	38,488 17.7	39,559 17.2	40,700 16.7	43,759 15.6	38,488 17.7	39,559 17.2	40,700 16.7	43,759 15.6	41,279 16.5	41,279 16.5	39,831 17.1
	1978	683,390	41,418 16.5	42,712 16.0	43,528 15.7	45,865 14.9	39,174 17.4	40,398 16.9	41,701 16.4	45,201 15.1	39,174 17.4	40,398 16.9	41,701 16.4	45,201 15.1	41,418 16.5	41,418 16.5	39,964 17.1
	1979	682,304	41,352 16.5	42,644 16.0	43,737 15.6	46,415 14.7	39,174 17.4	40,398 16.9	41,701 16.4	45,201 15.1	39,859 17.1	41,236 16.5	42,702 16.0	46,639 14.6	41,418 16.5	42,384 16.1	39,900 17.1
	1980	668,518	40,516 16.5	41,782 16.0	43,130 15.5	46,105 14.5	39,174 17.1	40,398 16.5	41,701 16.0	45,201 14.8	40,544 16.5	42,074 15.9	43,703 15.3	48,077 13.9	41,418 16.1	43,350 15.4	39,094 17.1
	1981	646,372	39,174 16.5	40,398 16.0	41,701 15.5	45,201 14.3	39,174 16.5	40,398 16.0	41,701 15.5	45,201 14.3	41,229 15.7	42,912 15.1	44,704 14.5	49,516 13.1	41,418 15.6	44,316 14.6	37,799 17.1

Table 17

Number of Teachers, Province of Ontario, in Special Education Programs, 1969-1981

	A	B	C
1969	3,481	3,481	3,481
1970	4,377	4,377	4,377
1971	4,486	4,132	3,665
1972	5,625	4,936	3,884
1973	6,706	5,694	4,076
1974	7,736	6,412	4,251
1975	8,725	7,102	4,416
1976	9,696	7,780	4,584
1977	10,682	8,474	4,766
1978	11,657	9,160	4,948
1979	12,673	9,880	5,152
1980	13,749	10,647	5,381
1981	14,999	11,547	5,675

Note: These estimates assume a constant weighted pupil loading of 12.5 pupils per teacher.