A PROGRAM BUDGET MODEL

FOR SELECTED SCHOOL PROGRAMS

IN THE PROVINCE OF ONTARIO

by

COLIN BRANDWOOD

B.Comm., Sir George Williams University, 1964
R.I.A., Society of Industrial and Cost Accountants of Canada, 1964

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Faculty of Commerce and Business Administration

The University of British Columbia
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ABSTRACT

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The study enquired into the need for better methods of presenting information for decision making purposes by boards of education. Chapters I and II present some information concerning the reasons for the current trend of introducing program budgeting into the public sector. A framework of criteria was identified within which a model could be developed.

The purpose of the study was to develop a model program budget which could be used by school boards in the Province of Ontario for the efficient allocation of funds in accordance with objectives and goals. Ideally the model would comply with generally accepted criteria and clearly indicate the cost of the three programs included in the study.

In conjunction with senior officials of the Board of Education on whose operations the model was based, a set of educational objectives was identified. The cost of each program under study was isolated from the total of appropriations for the year 1968. Financial and enrolment data were presented in a series of tables identifying pertinent revenues and expenditures per student. A multi-year projection of enrolment, financial and other data was made to emphasize the importance of the planning process.

The findings of the study are indicated below.

1. Provincial Grants could be maximized by using a program budgeting

system.

2. A program budget is compatible with the present system of provincial aid to education.
3. The data now assembled for budget purposes is appropriate for use in a program budgeting system.
4. Information for developing a program budget may be obtained at reasonable cost where this information is not now available, providing the system does not attempt the ultimate, at least initially, in considering subject costs as program costs.
5. A program budget would require a decentralized approach to the budgeting process.

The conclusions from the study were that a program budgeting system would be a useful tool for the administration in determining priorities and in utilizing resources efficiently. A further advantage is that such a system necessitates the inclusion of aspects which in the past have been neglected, such as the formal identification of goals.

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CHAPTER I

THE PROBLEM

Introduction

Most schools today have changed in both size and character from those in existence even a few years ago. In the beginning of the school system in Ontario, and for many years thereafter, smallness was fundamental. Schools were small, districts were small, with small school boards and small staffs. The facilities and services offered, however, met the needs of the children and the communities they served. Districts were often limited by the distance a child could walk to school.[1]

More recently, however, smallness, as a characteristic of education in Ontario, has been recognized as a problem. The wide variety of educational requirements demanded by modern technology can no longer be met by the simple single school program. Little doubt exists that the smaller units, particularly at the elementary level, have inhibited the expansion and growth of programs.

In 1945, there were 5,649 elementary, separate, and secondary school boards in the Province of Ontario. In September, 1967, there were 1,494 operating school boards, comprised of 777 elementary school boards, 482 separate school boards and 235 secondary school boards.

The necessity to provide for educational needs in the years ahead has resulted in legislation to establish a board of education in each of the thirty-eight counties of Southern Ontario and in each of the desig-

nated school divisions in Northern Ontario.

The prime objective behind the proposal to establish county boards of education is the desire to provide equality of educational opportunity for every child in the Province of Ontario.[2] Inherent in this objective is the necessity of offering school programs to meet the needs and interests of the student and to provide for the great variety represented by individual differences in ability, background and experience.

As a result of this legislation, in January, 1969, approximately 100 larger units of administration will be formed from the 1,494 school boards existing in the previous year.

In spite of the relative smallness of some administrative units and the relative simplicity of providing information on basic programs, there has been an increasing awareness by citizens and their representatives that traditional administrative practices, such as centralized budgeting and singular emphasis on financial accountability are inadequate. Speaking to the Ontario Urban and Rural Trustees' Association, Mr. Ying Hope, chairman of the Toronto Board of Education, emphasized the problem when he said, "The most crucial issue facing Ontario educators is the waste of millions of dollars through 'horse-and-buggy' administrative practices."[3] For reasons not easily identified, some of the larger school systems and organizations in the public sector have not been successful in allocating funds to the best advantage. Mr. Hope continued by saying:

> My experience as Chairman of the largest English language school board in Canada is that the administrative practices of many large boards - and I am not excepting the Toronto Board - are encrusted

with ancient traditions.[4]

Failure to have an adequate and effective system for reviewing priorities, and for reducing and eliminating marginal and obsolete programs, has resulted in some rather embarrassing situations in the past for senior governments. For example, a study prepared by two research economists of the Canadian Centre for Community Studies, for the Economic Council of Canada, declared bluntly "that three of the federal government's most sacred of sacred cow programs aren't worth the money being spent on them."[5] The study emphasized that hundreds of millions of dollars have been spent on the three programs, the Prairie Farm Rehabilitation Act, the Maritime Marshland Rehabilitation Act, and the Agricultural and Rural Development Act, and that "a large part of that money may have gone down the drain."[6] The authors concluded that many of the hundreds of projects listed in the Agricultural and Rural Development Act catalogue "cost the taxpayer one dollar so that a farmer somewhere in a fringe area can make say, fifty cents."[7]

Usually, in traditional budgets, there is no mention of how objects purchased relate to the aims, objectives and outputs of the organization. From the taxpayer standpoint there seems to be an analogy with the saying "let the buyer beware". To correct the situation, traditional budgets need more than justification. Justification may merely rationalize the status quo or be a defence of excessively high costs that have not been examined in terms of possible economies in cost, or the scope, or quality, of services provided.

Budgets prepared on a program basis have been found to be more intelligible than line item budgets (1) as decision making tools and (2)

for transmitting information to the general public.[8] The outlining of programs and activities to be undertaken together with all relevant cost data at least focuses decisions upon end results. There is never enough money to undertake all projects and programs considered desirable for any government unit. Emphasis on programs, therefore, compels decision makers to evaluate the end results in allocating the limited funds at their disposal.

Statement of the Problem

During recent years, many changes have taken place in educational thinking. Change in educational practice, however, moves more slowly, being restricted to some degree, by the inertia of teachers, parents, public officials and members of the Legislative Assembly. Some of the changes that have taken place can be attributed to the fusion of a number of elements such as (1) a growing recognition of the important contribution of education to economic and social development, and (2) the realization that the rapid expansion of education and the increased economic resources diverted to it, particularly by the public sector, necessitate taking all reasonable steps to ensure the efficient utilization of these resources.

Hatry and Cotton, in their book on program planning for the State-Local Finances Project, said

> The widening of the scope and the increased complexity of the public services offered by the several areas of government have been matched by the difficulties of guiding and co-ordinating functions of government. Because the context in which a government, whether it be federal, state, or local, seeks to provide for its citizens is one of scarcity of public resources in relation to over-all demands and objectives, the decision makers in government

> are forced to choose among competing programs. A rationally discriminating decision as to how best to serve the public interest can only be reached through the use of improved tools of public decision making.[9]

The administration of education in Ontario has become increasingly complex over the last few years and the necessity for change has become apparent to the Provincial Government. As a result some changes have taken place and others are scheduled for the future. The following extracts from the Statement on the Departmental Estimates 1968-89 to the Legislative Assembly by the Honourable William G. Davis, Minister of Education, indicate, to some extent, the revisions in thinking.

1. It is most important that we who are so closely involved with the government periodically make an effort to stand back from our everyday commitments and re-examine not only our functions but our basic assumptions about the nature of our responsibilities to society. One thing that emerges from such an examination is that the role of the Department of Education in a pioneer, underdeveloped jurisdiction is quite different thanin a sophisticated and complex industrial society.[10]

2. However, attributes which at one time were advantageous can, in a changing environment, lose their usefulness and require modification. One such attribute, necessary in time, was centralization [of the Department of Education].[11]

3. In all honesty, we must admit that while the tradition of a centralized system of education served the Province well it did lead to undue emphasis on regimentation and conformity. This was perhaps a necessary evil in a pioneer society.[12]

4. This evolution has required a fundamental re-examination of the role of the Department.[13]

5. With the decentralization of many of the traditional departmental functions to local authorities which are situated more closely to the public they serve, department officials will be able to concentrate on those responsibilities which they are best equipped to perform.[14]

A few items which, by their nature, have added to administrative complexity are as follows:

1. The "revolution in quality and diversity of programs;"[15] The

large increase in the retention rate of students which has been occurring annually for a number of years is a reflection of the greater opportunities that have become available;[16]

2. The inability of standing committees to perform a useful function in larger units of administration;
3. An increasing gap between the teaching force and administrative employees in matters concerning both the philosophy and practice of certain aspects of education. Brown indicates that the teacher militancy movement springs from several sources, one of which is "the increasing degree of professionalism on the part of teachers." He continues:

> Research shows this phenomenon to be a growing one; as teachers improve their qualifications and begin to feel a sense of self-direction in the practice of their profession, they begin to chafe--and justifiably so in most instances--under the restrictions of a bureaucratic establishment (Trask, 1964; Brown, 1963);[17]

4. The rapid growth in student enrolment and the cost of education;
5. The relative complexity of legislative grants (incorporating the foundation level), construction grants, and reporting procedures;
6. The public pressure to increase the quality of education but reluctance to pay increased costs either by direct or indirect taxation.

The problems mentioned above are by no means unique to Ontario as is shown by the following recommendation made in the State of California:

> In October, 1966 the final report of the Advisory Committee on School Budgeting and Accounting for the State of California contained recommendations for substantial revisions in state law and regulations relating to accounting and budgeting for public school purposes. The Committee recommended immediate modifications, amplifications, and changes in the detailed method of preparing and presenting school district budgetary and accounting data to make it more understandable to the taxpaying public through the eventual

> adoption of a recognized and acceptable plan of program budgeting in California schools. This concept stresses purpose before structure and performance as opposed to expenditures.[18]

Bundy, President of the Ford Foundation, stated the issue succinctly in his study of New York City Public Schools:

> Budget formulation now is incremental, fragmented and unprogrammatic....Thus, there exists now a system with little accountability to the public...in the way it allocates resources to meet education needs of the city.[19]

At a time when the public's aspirations and expectations of local schools appear to exceed willingness and capacity to provide sufficient resources, a demand has grown for planning and budgetary reforms which will result in a greater emphasis upon displaying the programmatic, end objectives of our schools.

Purpose of The Study

To develop a model program budget that complies with generally accepted criteria and clearly indicates the cost of the following school programs:

1. Arts and Science;
2. Business and Commerce;
3. Science, Technology and Trades.

In developing the model the following questions are pertinent:

1. Can Provincial grants be maximized by using a program budgeting system?
2. Is a program budget compatible with the present system of provincial aid to education?
3. Is the data now assembled for budget purposes appropriate for use in a program-budgeting system?

4. Can information for developing a program budget be obtained at a reasonable cost where this information is not now available?
5. Would a system of program budgeting require decentralization of the budget process?

Method of Study

The writer surveyed Regional Officials of the Department of Education to ascertain whether any school boards in Ontario were using program budgeting techniques. The survey revealed that no school boards were using such techniques. To meet the stated purpose of the study it was realized that an extensive review of related literature would be needed. First of all it was necessary to establish the extent and type of literature available on program budgeting and specifically the literature pertaining to program budgeting in school systems. This review included correspondence with certain major school systems in the United States to obtain additional information. From the literature an attempt was made to research the basic requirements or criteria for the establishment of an effective program planning and budgetary system.

It was felt that the purpose of the study would best be served by restating the line item budget of a large Board of Education in Ontario (approximately 14,000 secondary school pupils and 30,000 elementary school pupils) on a program basis. In addition, an analysis of the board's operations together with consultation with senior officials was required to complement details obtained from the budget documents.

Limitations

The section of this study entitled "Program Budgeting" considers

the concepts and characteristics of program budgeting. The treatment is presented to establish the parameters for the fulfillment of the purpose of the study and is not intended to be exhaustive. A considerable amount of literature exists on program planning and budgeting systems in general, with a much smaller amount available applicable to education. Consequently, it was considered necessary only to establish and support criteria to complete the purpose of the study. It is beyond the scope of this thesis to include cost-effectiveness, cost-benefit or in-depth analyses.

The study will cover

1. Identification of the fundamental educational objectives;
2. Definition of program goals;
3. Development of a single year budget on a program basis displaying pertinent costs;
4. Determination of major associated revenues enabling a net program cost to be ascertained;
5. Multi-year plan.

Definition of Program Budgeting Terminology

Program. A program for the purposes of program budgeting is a major function designed to achieve specified objectives that have been authorized by the governing body.

Traditional budget. A traditional budget is prepared for a one year period on an object-of-expenditure basis without any indication of the work to be performed towards specific objectives or goals, or the relationship to a long term plan.

Program budget. A program budget concentrates attention on the allocation of cost from the general budget categories to defined program classifications.

Sub-program. A division of a complex program to facilitate execution in a specific field for which partial goals could be set and achieved by specific operating units.

Activity. An activity is the smallest practical subdivision of work for management purposes toward program fulfillment, and must be physically identifiable. The costs included in budgeting and accounting for an activity's input should be primarily direct costs because the objective at this level is to compare input with output. The relationship of an activity to the overall objectives of a program should be readily apparent.[20]

Program goals. Program goals involve the operational content of a plan in terms of specific objectives that are to be met at a specific time, or times, and require a definite amount of resources.

Objectives. The term "objectives" refers to the general objectives towards which a program is directed. Objectives are distinguished from goals in that objectives are related to the existence of the program and may be very long range or continuing, whereas goals are planned to be completed in a specific time. For example, in meeting the objective "equalization of educational opportunity throughout the school system" a goal could be "to construct libraries in three (Schools A, B, and C) of the six schools not now having libraries.

Object-of-expenditure. An object-of-expenditure is an expenditure classified by the nature or type of item on which funds are expend-

ed. Expenditures are identified in terms of goods, equipment, and services required.

Performance budget. A performance budget presents the purposes and objectives for which funds are requested, the costs of the programs proposed for achieving these objectives, and quantitative data measuring the accomplishments and work performed under each program. When compared to program budgeting, performance budgeting involves the development of more refined management tools, such as unit costs, work measurement, and performance standards. Performance budgeting is an all-inclusive concept embodying program formulation and measurement of the performance of work in the accomplishment of program objectives.

Performance indicators. Performance indicators are physical measures of work effort which have a relationship with the use of resources so as to provide data that will help in presenting budget proposals, assigning personnel, allocating funds, and reviewing progress in the attainment of policy objectives and program work goals.

Responsibility centre. A responsibility centre is a particular division or unit indicating the organizational location and level of management that will carry out activities. Expenditures are related directly to the manager who is primarily responsible for expending funds provided.

Financial plan. A financial plan correlates objectives, authorities, responsibilities, and resources in a manner that keeps management at various levels of the organization fully informed on budget-proposals and performance, in the attainment of approved goals.

Appropriation. An appropriation is an authorization by a govern-

ing body that permits payment to be made out of identified funds with specific limitations as to amount, purpose, and time period.

Debenture payment. A debenture payment is the amount of principal and interest required to be paid at a specific time in accordance with a debenture by-law.

FOOTNOTES

CHAPTER I

[1]John P. Robarts, Larger Units of Administration for the Province of Ontario (Toronto: Office of the Prime Minister of Ontario, November 14, 1967), p. 1.

[2]Information Provided by The Honourable William G. Davis, Minister of Education of Ontario, in Connection with the Departmental Estimates 1968-69 (Toronto: Department of Education, June, 1968), p. 6.

[3]Ying Hope, "School Funds, System called Wasteful," Globe and Mail, June 5, 1968, p. 29.

[4]Ibid.

[5]"Better Value for Tax Dollars," The Monetary Times, February, 1968, p. 29.

[6]Ibid.

[7]Ibid.

[8]Lamar L. Hill and Frank Mattox, Program Budgeting in Public School Districts, Summary, Findings, Conclusion and Recommendations of Doctoral Thesis, University of Southern California. (Chicago: Association of School Business Officials 1967), p. 11.

[9]Harry P. Hatry and John F. Cotton, Program Planning for State, County, City (Washington: State-Local Finances Project, The George Washington University, January, 1967), p. 3.

[10]Statement by The Honourable William G. Davis, Minister of Education of Ontario, on the Departmental Estimates 1968-69 (Toronto: Department of Education, June, 1968), pp. 1-2.

[11]Ibid., p. 2.

[12]Ibid., pp. 4-5.

[13]Ibid., p. 5.

[14]Ibid., p. 8.

[15]Education for New Times, Statement by Hon. William G. Davis, Q.C., LL. D., Minister of Education and Minister of University Affairs, to the Legislative Assembly of Ontario, July 1967 (Toronto: Department of Education 1967), p. 2.

[16]Ibid., p. 4.

[17]Allan Brown, Changing School Districts in Canada (Toronto: Department of Educational Administration, The Ontario Institute for Studies in Education, 1968), p. 13.

[18]Lamar L. Hill and Frank Mattox, Program Budgeting in Public School Districts (Doctoral Thesis, University of Southern California, 1967), p. 5, citing California State Assembly Advisory Committee on School Finance, Final Report to the Subcommittee on School Efficiency and Economy (State of California, Assembly Interim Committee on Education, October, 1966).

[19]Harry J. Hartley, Programme Budgeting and Cost Effectiveness in Local Schools, Paper presented to the meeting of Ad Hoc Group of Budgeting, Programme Analysis and Cost Effectiveness in Educational Planning 3rd - 5th April 1968. (Paris: Organization for Economic Co-operation and Development 1968), p. 5, citing Reconstruction for Learning.

[20]Program Review and Estimates Manual (Ottawa: Treasury Board, Program Branch, Federal Government of Canada, March, 1967), p. 207.

CHAPTER II

PROGRAM BUDGETING

There seems to have been an extensive theoretical development of program budgeting as evidenced by the amount of literature which has been written on the subject. Practical applications of program budgeting, however, are not yet very general.[1]

Acceptance by Governments

The widening scope and increased complexity of elementary and secondary education is being highlighted by an increasing difficulty in obtaining funds to finance desired programs. The effectiveness of the funds which are available is considerably reduced because decision makers frequently do not have adequate and reliable information to support efficient allocation of the funds.

Senior governments have faced the problems associated with a multiplicity of programs for many years but have been slow to react to any great degree. In 1912 President Taft's Commission on economy and efficiency recommended extensive changes in the then-existing procedures. The concept of program budgeting probably evolved at this time. The Commission stated:

> The best thing that a budget can do for the legislator is to enable him to have expert advice in thinking about policies to be determined.....
>
> To the administrator the advantage to be gained through a budget is the ability to present to the Legislature and to the people,

> through the Chief Executive or someone representing the administration, a well defined, carefully considered, lucidly expressed welfare program to be financed, and in presenting this, to support requests for appropriation with such concrete data as are necessary to the intelligent consideration of such a program.[2]

Taft's Commission continued by proposing a clarification of the budget in terms of programs or functions, distinguishing between capital and current items, and a thorough and systematic review of the budget after the fact. Some of the Commission's recommendations finally went into effect in 1921 with the passage of the Budget and Accounting Act.

Further progress was held up until after World War II when in 1949 the Hoover Commission stated:

> We recommend that the whole budgetary concept of the federal government should be refashioned by the adoption of a budget based upon functions, activities, and projects; this we designate a performance budget. Such an approach would focus attention upon the general character and relative importance of the work to be done, or upon the service to be rendered, rather than upon the things to be acquired, such as personal services, supplies, equipment, and so on. These latter objects are, after all only a means to an end. The all important thing in budgeting is the work or the service to be accomplished, and what the work or service will cost.[3]

In August of 1965, President Johnson informed his cabinet that program budgeting, commenced in 1961 in the Defense Department, had been so successful that it would now be applied to all departments and agencies.

In Canada, senior governments have been equally slow to respond effectively to the challenge of burgeoning programs and expenditures. In 1962, the Royal Commission on Government Organization (for Canada), recommended fundamental changes to improve management of government operations. Many of the recommendations are being implemented progressively over a number of years. The major area of change is concerned with the introduction of new concepts of program planning and budgetary

control, and the submission of departmental budgets in the form of program review and estimate documents.

At the provincial level, the Royal Commission on Government Administration for the Province of Saskatchewan stated:

> Historical emphasis on financial accountability prevails where emphasis upon responsibility for accomplishment should be the major criteria. The traditional attitudes of government toward financial control have constricted flexibility and strangled initiative.
>
> Accounting systems which confine rather than channel; information systems which control rather than inform;.....all work to impair the ability of a dynamic organization. Current management practices do not clearly define the roles and responsibilities of the various levels of management. On the one hand department, branch and division heads are charged with the responsibility for administration. On the other hand, these administrators are not given the flexibility to discharge their administrative functions nor are they held fully accountable for the achievement of definable goals.[4]
>
> Public funds are appropriated for a purpose. The accomplishment of the purpose must become the basis for management: program objectives must be the focal point for the public administration. The use of resources, whether manpower, capital or facilities, must be formally related to the achievement of these objectives. There can be no other rationale for their use.
>
> There is abundant evidence to suggest that the administration of government programs has failed to meet the test of rapid growth.[5]

While the above criticisms are based on the operations of the Saskatchewan Government it seems clear that many of the criticisms are equally applicable to school board operations, since in a sense, they are an extension of a provincial department. Under the British North America Act of 1867, sovereign powers over education were granted to the various provincial legislatures by Section 93.

The Ontario Department of Education is responsible for the administration and enforcement of the statutes and regulations respecting all types of schools which are supported in whole or in part by public funds.

In the fiscal year 1969-70 the estimates of the Ontario Department

of Education will be submitted to the Treasury Board "on the new Program activity basis. This is an essential part of the new system of program budgeting which is being implemented this year in the Ontario Government."[6] Because Provincial Legislative Grants for elementary and secondary education total $563 million dollars for 1968-69[7] (total education expenditures $876,364,000)[8] there seems every indication that the preparation of program budgets will become mandatory at the school board level. Recently, the Minister of Education made the statement: "We now have to look at every last expenditure to decide whether it is a worthwhile one, and that should apply all the way down the line in education."[9] Further, the Minister has predicted that "within a year of their inception county-wide boards of education will be required to submit five-year capital budget forecasts."[10]

Boards of Education have been slow to adopt Program Budgeting in spite of apparent advantages. Several reasons have been expressed for the reluctant attitude. One of the major problems is the difficulty of measuring performance or output for education. Burkhead suggested that "school administration has been relatively untouched by these reforms in budgetary analysis and classification."[11]

Burkhead continued, "It is a little difficult to see why school administrators have remained aloof from these recent and important developments in budgeting."[12] He suggests the following as possible reasons:

1. Schools have remained separated from other arms of government, and have maintained independent traditions of administration;
2. School budgeting is typically highly centralized;
3. The frequency of innovation is low in school administration.

Some authors, such as Ovsiew and Castetter are opposed to any emphasis on cost accounting. They accept the "functional uses of the budget" but state:

> Many of the devices used by municipal governments in the 'performance' budget (standard work units, standard costs, man-hours per unit and work performed) are not applicable in education.

They continue by saying

> Nor are there cost standards for the education of children. Research shows, for example, that as expenditure levels increase, the quality of education improves.[13]

In the writer's opinion the latter statement is very much open to question. For example, the results of a recent unofficial study of school costs in one county of Western Ontario showed that in the opinion of a provincially employed inspector of schools, the best equipped school in the county offering the most options and the best educational opportunity had the lowest cost per student (School D). The pertinent results were:

School	Enrolment	Gross Cost Per Student
A	374	$ 1,205
B	615	1,252
C	1,282	1,011
D	949	955
E	493	966

Some school boards, mainly in the United States, have accepted the challenge and report varying degrees of success in applying program procedures. Hartley reports eleven school boards which purport to be using program budgeting.[14] The study by Hill and Mattox shows others who are using program budgeting.[15] Four of the most extensive and interesting United States projects are those of Dade County (Florida), New York City, Sacramento, and Chicago. Dade County has allocated

$600,000 (including assistance from the federal government) for a comprehensive research project in program budgeting lasting over three years. The objective of this project is "to determine and describe the procedures for implementation and operation of a program budget in a large public school system."[16] Ultimately the results of this project will influence school budgets in the more progressive jurisdictions. However, it will be several years before definite guidelines and manuals are prepared for distribution.

In 1967, the Board of Education for the City of New York announced the first-phase plans for the development of a comprehensive P.P.B.S.[17] An official in charge of the new program described the purpose as follows:

> It is the intent of P.P.B.S. to relate costs to objectives of the New York City School System. In that way, we can more realistically determine if we get maximum value for our dollar. Output measures, or what industry would call productive units, would be examined and financial resources reallocated, if desired results are not maintained.
>
> In addition, we are trying to bring costs down to the school level so that in the process of decentralizing New York City schools we shall know, and the communities will know, what the total costs are for each school. It will be possible, therefore, to reallocate resources even on the individual school level in an attempt to facilitate optimal achievement of the children.[18]

Undoubtedly, as the first ventures into program budgeting which are now taking place prove useful to the superintendent and to decision makers, more school boards will want to overcome the barriers which are now raised against its introduction.

Purpose and Characteristics

A program planning and budgeting system is aimed at assisting management to make better decisions concerning the allocation of re-

sources between alternative and competing objectives. Its ultimate objective is the development and presentation of pertinent information concerning the cost and benefit implications of major alternative courses of action over the long term.

One authority has said that the program concept also seems important for an efficient decentralization of decision making.[19]

Some primary characteristics of a program planning and budgeting system are as follows:

1. Identification of the fundamental educational objectives;
2. Definition of program goals;
3. Systematic identification and analysis of alternative ways to achieve objectives;
4. Development of a financial plan displaying the pertinent costs, both capital and non-capital;
5. Development of a multi-year program and financial plan (five years in addition to the current year has been generally accepted);
6. Identification of major associated revenues of programs, where appropriate, enabling a net cost of the program to be determined;
7. Continuous review of the system including program evaluation, program formulation, program reporting and program revision.

Advantages and Disadvantages

Several of the advantages of program budgeting were highlighted in the section of this chapter dealing with acceptance by governments. The Board of Education of the City of New York, in P.P.B.S. Bulletin No. 1 states that program budgeting should:

1. Facilitate the whole managerial decision process through the provision of system, discipline, and improved information flow.

2. Provide school officials and administrators with total current and future resource implications of alternative courses of action.

3. Utilize the time of senior officials more effectively by enabling them to focus on major objectives, policies and resource decisions.

4. Enable early identification of potential problems and reduce the likelihood of crisis management, through improved planning and forecasting.

5. Define and integrate management information needs and improve the development of data systems to meet these needs.

6. Improve program justification to higher authorities, and therefore assist in competing for city, state and Federal funds.

7. Facilitate community relations by improving visibility of objectives and the resources available to accomplish these objectives.[20]

The Program Planning and Budgeting Office of the New York Board of Education states:

> The major advantage of PPBS is integration of all elements of the decision process to produce more decisions that are optimal for the entire New York City Public School System as a whole, rather than for individual activities or vocal minorities.
>
> PPBS will not necessarily make difficult decisions any easier but improved decisions can be reached on complex issues by the use of methods which seek to clarify as many aspects of such problems as possible, and which insure that all relevant alternatives and significant interrelationships are considered.
>
> The potential long-term benefits of PPBS to school officials, teachers, pupils, families, and taxpayers, through more efficient and effective use of limited resources, make PPBS worth the considerable effort required to establish it.[21]

Lamar L. Hill states the advantages of Program Budgeting as follows:

1. The whole budget problem is considered in terms of meaningful programs, not just objects of expenditures.

2. Determines major organizational goals to be attained.

3. Develops specific objectives for each program and relates activities accordingly.

4. Multi and future year implications are explicitly identified.

5. All pertinent costs are considered for current, alternative and proposed programs.

6. Systematic analysis of alternatives, and results or "output", is used.[22]

According to Hartley:

> The major advantage of program budgeting over conventional approaches is that in the new format, greater attention is devoted to outputs, or programmatic outcomes of a school, as compared to the inputs (objects purchased) which are necessary to support these programs.[23]

Another author said that the main advantage of introducing P.P.B.S. lies in the fact that it enables the policy maker to ask questions in a systematic manner. The system must then provide factual information or informed estimates.[24]

The following have been listed as limitations of a program budget format:

1. Organizational strains are not eliminated;

2. Political elements may act as a barrier;

3. Degree of centralization of authority is not clear;

4. Every systems analysis has defects;

5. Projecting long range costs is hazardous;

6. Opposition to planned change permeates education;

7. Evaluation of educational programs is primitive;

8. Local schools have inadequate staffs for systems planning;

9. Activities and programs may not be mutually exclusive;

10. Present educational goals are stated in truisms and cliches;

11. Department of Education program structure is not necessarily appropriate for local schools;

12. Conclusive evidence of the success of P.P.B.S. in education is

not abundant.[25]

A program planning and budgeting system is primarily a planning system leading to program decisions. The decisions reached are then used as guidance in preparing detailed budgets. If provision is made for translating planning decisions into compatible budget estimates, it is possible to obtain most of the advantages of the system where it is desired not to make a complete transition from current practices.

Traditional Budget

Traditionally local budgets have been viewed as a device for providing strong fiscal accountability and managerial control accountability to the public for its funds.[26] They have tended to be controller's budgets. The primary basis for next year's budget has been the current budget, the major difference being an adjustment in each of the conventional categories.

Hartley contended that program budgeting need not replace conventional budgeting procedures.[27] Line item and program budgets probably should be maintained concurrently as a means of describing an organization's expenditures on both an input and an output basis.

He continued,

> Program budgeting is not a panacea...the 'original sin' in the world of school finance is not budgeting, but comprises numerous intervening variables which existed long before the program budget: human error, poor judgement, dishonesty, resistance to accountability, administrative short-sightedness, adherance to orthodoxy, manifest political factors and the like."[28]

Transfer from presentation of a traditional type budget to a program budget raises certain problems such as assigning costs of auxiliary services. These costs may be contained in separate programs or allocated

on a proportionate basis to "end product" programs.

Program Classification

A program, for the purposes of program budgeting, is the highest level of work performed by an organization in carrying out assigned responsibilities. Ideally, it designates that portion of work which produces an end product or service which is representative of the purposes for which the organization was established. The program classification generally

1. Reflects the responsibilities of major organizational units;
2. Facilitates formulation of the budget in relation to policy objectives;
3. Provides the framework for decision making;
4. Illustrates effectively how resources will be used in achieving specific objectives;
5. Facilitates administrative control in determining the results of operations in relation to the budget approved;
6. Directs attention to policy objectives, planned performance and cost.

The United Nations Department of Economic and Social Affairs manual states: "The program classification furnishes a framework for developing an agency budget, and a broad basis for review of proposed plans, estimates of requirements, and progress of work in relation to approved plans."[29]

The manual continues:

The lack of a measurable end product should not militate against

> the establishment of a program that otherwise meets the criteria of providing a suitable basis for planning, reviewing budget proposals, and evaluating performance against plans."[30]

In some situations, what would appear to be a logical program may be divided into two or more segments because of certain circumstances.

> For instance, vocational education in the Philippines is treated as a single program. In another country, the size and nature of that program and the way it is conducted may make it preferable to identify trade and industry in education, training in home industries, etc., as separate segments of vocational education."[31]

In similar complex situations it may be desirable to establish separate elements of the program as sub-programs.

For each program category of the program structure, the cost estimates should represent estimates of all costs and revenues pertinent to the program. Consideration should be given to both direct and indirect costs and to costs both current and future.[32]

Program Cost Accounting

Program cost accounting is used in the instructional programs to determine cost relationships between course areas and courses. One of the primary purposes of program cost accounting is to identify cost efficiencies. Therefore, in a system of complete program cost accounting, all cost attributable to each program or sub-program must be accounted for. In most cases the volume of analytical work and posting necessary involves the use of computer facilities.[33]

Hill and Mattox found that a major percentage of the school boards studied already using a program budgeting system were utilizing electronic data processing equipment.[34]

Program cost accounting can be utilized on a limited basis along

with a traditional system. For example, with the establishment of an advanced mathematics course, the differential costs only, such as instructional and special equipment costs, would be charged to the cost of course maintenance. All other costs such as utilities and custodial services would be incurred whether or not the course was offered.[35]

Where records are maintained for more than one program, items such as utilities, heat and custodial services may not be directly chargeable to each program because the exact charge to be made is not readily identifiable. In such cases, costs must be prorated among programs by a method that has a direct relationship to the activity for which the expenditure is being prorated. For example, floor area has no direct relationship with the workload of a teacher. It could not qualify, therefore, as a desirable basis for prorating teachers' salaries.

An important consideration in selecting a prorating method is the practicability of the method chosen. It must be as simple as conditions will allow, feasible to apply, and capable of achieving the desired objective.

No single method will adequately prorate the many different kinds of expenditures encountered in school finance.

According to the Office of Education the three basic prorating problems are as follows:

1. Prorating between functional classifications such as prorating the salary of a person who performs custodial and maintenance work between operation of plant and maintenance of plant accounts.

2. Prorating between program areas or organization units such as prorating the salary of a teacher who serves both an elementary and secondary school.

3. Prorating expenditures to community services accounts such as pro-

rating expenditures for heat, light, and supplies between community activities, rental of facilities.[36]

To minimize the work involved and to obtain the benefits of efficient expenditure proration, school boards will find it expedient, at the beginning of the year, to determine the classes of expenditures to be prorated and establish standard ratios for prorating each class. Once set up, the standardized ratios would be applied to each class of expenditures as necessary, without the need for elaborate calculations each time an expenditure is made.

FOOTNOTES

CHAPTER II

[1]George A. Terhune, Performance and Program Budgeting Practices in the U.S. and Canada, Accounting Publication No. 13-2, Committee on Budgeting Report No. 2 (Chicago: Municipal Finance Officers Association August 25, 1966), p. 8.

[2]David Novick, Program Budgeting: Long Range Planning in the Department of Defense (Santa Monica: The Rand Corporation, November, 1962), p. 30.

[3]Lamar L. Hill and Frank Mattox "Program Budgeting in Public School Districts" (Doctoral Thesis, University of Southern California, 1967), p. 2. citing Commission on Organization of the Executive Branch of Government, Budgeting and Accounting, A Report to the Congress (Washington: U.S. Government Printing Office, February, 1949), p. 8.

[4]Royal Commission on Government Administration for Saskatchewan 1965 (Regina: Queen's Printer, 1965), p. 25.

[5]Ibid., p. 26.

[6]Department of Education, Preparation of 1969-70 Estimates (Toronto: Office of the Assistant Deputy Minister, Administration, May 17, 1968), p. 2.

[7]Department of Education, Summary of Estimates, Estimates 1968-69 submitted to the Legislative Assembly March 12, 1968 (Toronto: Department of Education 1968), p. 35.

[8]Ibid.

[9]"Davis Sees Ontario on Bankruptcy Edge Within Five Years," The London Free Press, March 13, 1968, p. 10.

[10]"Five Year School Budgets Predicted," The London Free Press, April 5, 1968, p. 28.

[11]Jesse Burkhead, The Theory and Application of Program Budgeting to Education (Proceedings of the Eighth National Conference on School Finance, National Education Association, April 6, 1965), p. 14.

[12]Burkhead, op. cit., p. 5.

[13]Leon Ovsiew and William B. Castetter, Budgeting for Better Schools (Englewood Cliffs, New Jersey: Prentice Hall, 1960), p. 290.

[14]Harry J. Hartley, Programme Budgeting and Cost Effectiveness in Local Schools, Paper presented to the meeting of Ad Hoc Group of Budgeting, Programme Analysis and Cost Effectiveness in Educational Planning 3rd. - 5th. April 1968. (Paris: Organization for Economic Co-operation and Development 1968), p. 14.

[15]Hill and Mattox, op. cit., pp. 122-216.

[16]A Program Budget Research Proposal (Miami, Florida: Dade County Board of Public Instruction, November, 1966), p. 4.

[17]Hartley, op. cit., p. 17.

[18]Hartley, op. cit., p. 19. citing Letter from Murray Hart, Assistant Superintendent for the office of P.P.B., Board of Education of the City of New York, January 10, 1968.

[19]Hartley, op. cit., p. 13.

[20]Jeanette Bragin, Program Budgeting, Annual Volume of Proceedings, Association of School Business Officials, October, 1967 (Chicago: Association of School Business Officials 1968), p. 156.

[21]Ibid.

[22]Lamar L. Hill, Program Budgeting in Public School Districts, Annual Volume of Proceedings, Association of School Business Officials, October, 1967 (Chicago: Association of School Business Officials 1968), p. 159.

[23]Hartley, op. cit., p. 3.

[24]Harry P. Hatry and John F. Cotton, Program Planning for State, County, City (Washington: State-Local Finances Project, The George Washington University, January, 1967), p. 7.

[25]Hartley, op. cit., p. 27.

[26]Ibid., p. 3

[27]Ibid., p. 12.

[28]Ibid.

[29]Department of Economic and Social Affairs, A Manual for Programme and Performance Budgeting (New York: United Nations, 1965), p. 7.

[30]Ibid.

[31]Ibid.

[32]Hatry and Cotton, op. cit., p. 23.

[33]Office of Education, Principles of Public School Acounting. (Washington: U.S. Government Printing Office, 1967), p. 248.

[34]Lamar L. Hill and Frank Mattox, "Program Budgeting in Public School Districts," Summary, Findings, Conclusion and Recommendations of Doctoral Thesis, University of Southern California. (Chicago: Association of School Business Officials 1967), p. 14.

[35]Program Review and Estimates Manual (Ottawa: Treasury Board, Program Branch, Federal Government of Canada, March, 1967), p. 248.

[36]Office of Education, op. cit., p. 245.

CHAPTER III

THE MODEL

Introduction

A major portion of the adult life of most people is, in a broad way, concerned with remunerative work contributing to the individual's own well-being, and to that of society in general. One important function, of a school system is, therefore, to ensure that approximately the "right" amount of the various kinds of educational qualifications required by a healthy economy are forth coming. A system which produces a large number of students for whom there is little demand may be said to be failing in its tasks, and so may a system producing an inadequate number of people with qualifications which are in demand. It is failing individuals who cannot capitalize on their qualifications, and society by not ensuring the best preparation of its human resources and utilization of economic resources. It seems reasonable to assume that where several programs are in operation, detailed planning is necessary to ensure that the school system discharges its responsibilities in an efficient manner. Moreover, the benefits and advantages of the sometimes conflicting aims of equality of opportunity and individual freedom of choice in education appear to be maximized only with a substantial amount of planning. In terms of planning, the following questions are pertinent to the development of a program budget:

1. How should the structure of the system develop?

2. How many pupils must be provided for in each program?
3. How many teachers will be required?
4. How can the best use be made of teachers and equipment?
5. What supporting services will be required?
6. Are present facilities adequate and how well are they utilized?
7. What type of school construction should be undertaken?
8. What factors should be considered in determining program expenditures?
9. How much of the program's expenditures will be borne locally?
10. What changes will take place in program content?

The answers to these and similar questions will provide a framework within which a budget can be developed. The initial step is the development of fundamental educational objectives.

Fundamental Objectives

In a society which is constantly changing, fundamental objectives periodically need to be redefined in the light of the general trend.

A program budget, therefore, must begin with the fundamental objectives of the school system. The educational goals (or targets) which are established in the process of planning can be evaluated only against the background of these more fundamental objectives. The technical planning process, therefore, begins with these more general objectives:

1. Exploring the inter-relationships of the objectives in order to specify their implications for the technical planning process;
2. Attempting to formulate objectives which are relevant to educational planning at a level of generality that embraces what is

common to the system as a whole.

Fundamental objectives are outlined only insofar as they are needed as a basis for examining the validity of specific educational plans and goals.

Educational Objectives of the School System

For the purposes of the model the following objectives were defined:

1. To meet the differential needs of various groups of students and individuals;
2. To equalize educational opportunity throughout the school system;
3. To be flexible and sensitive to the shifting talents, interests and plans of students as well as a continuously changing labour market for graduates;
4. To provide school programs from which graduates will obtain the necessary qualifications and preparation to continue their education or move directly into employment;
5. To develop moral and civic values, and cultural attitudes;
6. To provide the skills necessary for self-fulfillment, an appreciation of, and contribution to, the cultural experience of society;
7. To retain the student in school until he graduates or has progressed as far as he is capable;
8. To develop in each student the capacity to adjust himself to the career and social changes encountered as a result of modern technology.

A fundamental condition for the implementation of the objectives

is that the school system make efficient use of both human and real resources.

In terms of planning, the educational objectives are reflected by:

1. Maintaining a continous re-assessment and revision of all programs, options, and courses in order to meet the individual needs of the student and the needs of a changing society;
2. Examining and adopting new techniques to improve instruction, such as team teaching, seminars, instruction aids, television, resource centres, lanuage laboratories, and computer aids to instruction;
3. Providing adequate educational facilities to meet increasing enrolments in proportion to the needs of the various programs;
4. Emphasizing learning rather than teaching. With more facilities and equipment than presently available student appreciation of subjects such as science, art and reading can be expanded by permitting students greater freedom to choose their own experiments, choose their own projects and to solve their own problems;
5. Designing new school facilities in keeping with the demands of changing techniques and program requirements;
6. Creating an environment for learning conditioned by factors other than those related directly to teacher instruction. This environment demands an increasing emphasis on complementary student services such as medical, dental, guidance, psychological, and research so that the student may be (as far as is humanly possible) physically, emotionally, and mentally prepared for learning.
7. Maintaining a strong in-service training plan to make good teach-

ers into better teachers through the use of consultants, co-ordinators, subject committees, workshops, and conferences;

8. Providing a school program which will prepare the student not only for employment or further education but also for leisure time so that he is prepared for living a full life versus simply making a living;
9. Replacing old schools and obsolete facilities and equipment in accordance with a long range plan.

A framework is required within which objectives and goals can be examined and defined, and then transformed into an action plan.

Program Budgeting Components and Responsibilities

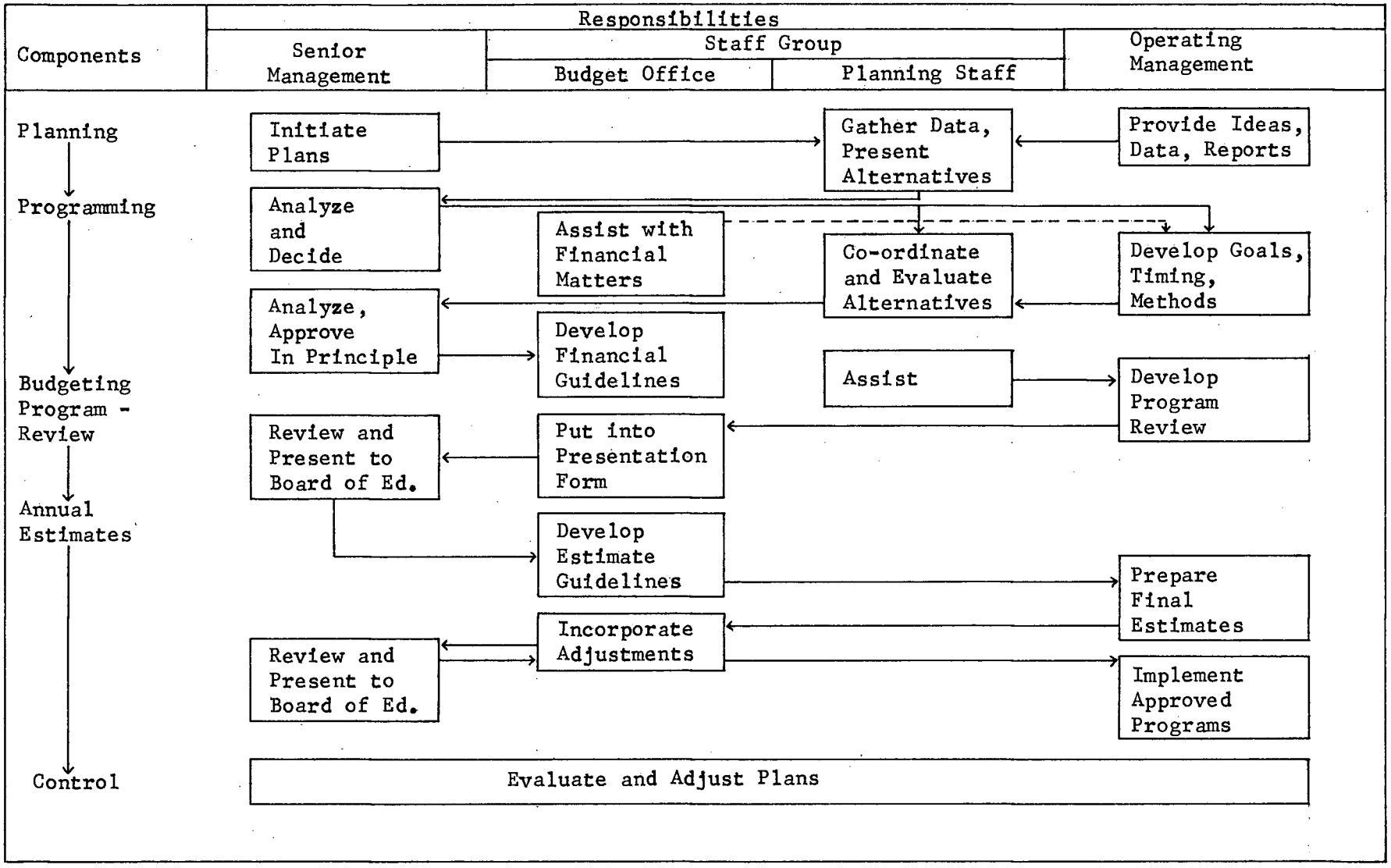
The operational framework within which a program planning and budgeting system operates can be presented in a number of definite steps. Planning, programming and budgeting involves a continuous re-assessment of objectives, goals, and the methods by which resources can be allocated in the most effective manner. The phases which could be used in implementing and maintaining the system are shown in Figure 1, page 37. This figure, based on an idea for implementing program budgeting into the Ontario Department of Education, shows the system's components and the responsibilities of senior management groups.

Planning

In the planning phase, plans or ideas are initiated by senior management or program managers. The plans are passed to the planning department or committee which obtains additional information and ideas

FIGURE 1

PROGRAM BUDGETING COMPONENTS AND RESPONSIBILITIES



from operational management. After summarization and due consideration the planning group will return to senior management a report showing a recommended plan and possible alternatives. From an analysis of the alternatives senior management can make a tentative decision on a course of action.

Programming

With the assistance of the budget office staff concerning financial matters, program managers will develop operational goals, methods and timing for the alternatives presented. Next, the planning staff will co-ordinate and evaluate the alternatives and present the results for analysis and approval in principle by senior management. Finally, in the programming stage, the budget office staff will develop financial guidelines.

Budgeting and Program Review

The planning staff will assist operating management in the development of the program review document (multi-year plan). The program review is then passed to the budget office for consolidation, and possible rearrangement into final form, and subsequent transmittal to the Board of Education. From the alternatives presented, the Board will approve a plan of action, from which the budget office will prepare final estimate guidelines.

Annual Estimates

Operational management will prepare final estimates for program operations during the coming year. The estimates will be transmitted through the budget office for presentation, analysis, and final accept-

ance by the Board of Education. Finally the budget office will make any adjustments required by the Board and give operating management the authority and responsibility for implementation of approved programs.

Control

Throughout the year covered by the estimates the program's operation will be evaluated through feedback and reports, and adjustments will be made as necessary.

Accounting: Systems and Operations

With the adoption of a program planning and budgeting system, the accounting procedures must be revised to fulfill the new system's requirements of planning, budgeting and reporting. An adequate accounting system must be an information system about the past, present, and future, providing managers with the means of planning, budgeting, and controlling "and not merely an arithmetical record of the ins and outs of voted money and revenues."[1]

Traditionally, the primary classification of most school board accounting systems in the Province of Ontario has been expenditures by object. While this classification is necessary in any accounting system, program budgeting requires additional classifications. The Federal Government of Canada has suggested that within each program, expenditures and revenues may be classified as follows:

1. by purpose, i.e., the activity or activities in which the responsible unit is engaged;
2. by source, i.e., the organizational unit responsible for initiating the expenditure or providing the service from which revenues are obtained, such as responsibility centres [schools];

3. by object of expenditure, i.e., salaries, travel, material, etc.[2]

The information required by the whole system of financial management can readily be obtained by an appropriate revision of the codes of accounts.

In a program planning and budgeting system, the method by which costs are accumulated is of major consequence. The major objective of cost accounting is to determine the cost of producing a unit of product, or the rendering of a unit of service. A decision must be made, therefore, on whether an historical or standard cost approach should be used. While increasing or decreasing trends in costs can be detected through the use of historical costs, the efficiency of management remains unknown since no precise targets or standards are available for comparison with actual costs. In contrast with an historical system, the Treasury Board at Ottawa stated that a standard cost system:

(i) provides greater accuracy in planning and controlling;

(ii) facilitates the preparation of budgets;

(iii) predetermines the cost of a plan or project;

(iv) simplifies the costing procedures;

(v) introduces a yardstick to measure performance;

(vi) simplifies the valuation of inventories and stabilizes the recorded material costs, and

(vii) permits a variety of analyses to calculate and set the rates for goods and services.[3]

Because standard cost represents the desired cost to be incurred, variances from standard cost will indicate the degree of efficiency and expose the areas deserving attention. A budgetary system incorporating standard costs seems to offer the best combination for assisting manage-

ment to control operations.[4]

Program Determination

Program planning involves establishing appropriate relationships between operations which are currently being proposed, long-range, and short-range plans. Data must be developed in terms which facilitate administration and control, and show the physical and financial progress being made towards accepted goals. Separate programs are usually identified for groups of individuals who have similar needs, interests, educational make-up, or capabilities.

There is no clear-cut set of rules or definition for the establishment of specific programs in a school system, because school systems do not have homogeneous end objectives such as trees planted by a forestry department, or tons of garbage collected by a sanitation department. Each program must be capable, however, of having defined for it a detailed set of goals, and a specific program framework for meeting those goals. Frequently, the choice of program classification will be influenced by one or more of the following:

1. Requirements of the Department of Education concerning curriculum;
2. Conformity with the Grant Regulations of the Department of Education;
3. Relationship of responsibility centres within the administration of the Board of Education;
4. Board of Education policy.

In Hartley's opinion there are at least three basic approaches to devising a program structure:

1. Organizational or grade level categories. Programs might include: a. early childhood b. primary grades c. intermediate grades d. technical high school e. comprehensive high school, etc.

2. Organization on curricular or subject-matter. Direct and indirect costs are apportioned to subject areas such as: a. language arts, b. science, c. mathematics, d. social science, creative arts, etc.

3. Organization on a hybrid format. Combining grade level organization at the elementary level with subject matter at the secondary level.[5]

Concerning program development and program costs, Orlando Fierno, Director of Research of the Baltimore City Public Schools has said:

> Surely, for those who wish to embark on the path toward program accounting only an absolute minimum of programs and activities should be costed out. And what is equally important they should be costed out on an accrual basis rather than on a cash basis. What the structure of program costs should be, no one really knows. Some persons think that school districts, particularly large systems, should seek to attain the ideal...in other words, program costs by subject matter for grade level, with costs assigned to each school in the system. The literature abounds with such proposals, particularly by college professors. Before anyone takes his school system down this primrose path, he should weigh seriously the benefits to be derived against the costs involved. Program costs by subject matter, by grade level, and by school, involve a vast amount of work because it necessitates the gathering and manipulation of numerous cost items.[6]

The organization of all secondary schools in the Province of Ontario (except experimental schools) is defined for the year 1968-1969 in the Department of Education circular H.S.I. "Recommendations and Information for Secondary School Organization Leading to Certificates and Diplomas, 1968-1969." The programs considered in this model are consistent with Department of Education requirements for reporting students for enrolment purposes.

Each program in the model has a five-year course, the graduates of which can proceed from grade 13 to university. Each program also has a four year course which terminates in grade 12 from which graduates

move directly into industry or for additional education to colleges of applied arts and technology. The Science, Technology and Trades program, in addition, has a two-year occupations course. Total program enrolment details are shown in Tables I, II, and IV, pages 50, 52 and 53.

Subjects of study for each course in all three programs consist of obligatory or core subjects and optional subjects. Examples of subjects offered are as follows:

1. Obligatory (in all programs). English, history, geography, physical education.
2. Optional - Arts and Science. Art, music, industrial arts, home economics, agriculture.
3. Optional - Business and Commerce. Shorthand: typewriting. Accounting: bookkeeping. Business Machines, data processing.
4. Optional - Science, Technology and Trades. Drafting, electricity, electronics, machine shop, industrial chemistry.

Complete information concerning obligatory and optional subjects in each program is contained in the Ontario Department of Education Regulation "Diplomas for Pupils of Elementary and Secondary Schools."

Budget Appropriation, 1968

The budget for the year 1968 which was used as a basis for the model was presented on a traditional line item basis. An examination showed that revenues were identified only as public school, secondary school, or unclassified. Expenditures were presented in seven sections:

1. General Administration	$ 4,614,195
2. Director of Education	108,028
3. Superintendent of Curriculum	2,084,938
4. Superintendent of Student Services	898.504

5. Superintendent of Instructional Personnel		$ 9,395,088
6. Superintendent of Business		3,454,695
Sub-Total		$20,555,448
7. Secondary School Number:	1	$ 1,023,531
	2	794,679
	3	1,208,417
	4	1,030,700
	5	2,140,998
	6	874,636
	7	709,021
	8	471,530
	9	708,558
	10	626,620
	11	597,412
	12	1,112,447
	13	193,709
Sub-Total		$11,492,258
Total Board of Education Budget		$32,047,706

Because certain administrative and financial functions were reorganized in 1967, many of the individual 1967 expenditures were not directly comparable with the 1968 budget. Similarly the reorganization of expenditures required in developing the model prevented the previous year's figures being included in the tables.

Prorating Expenditures to Programs

In Chapter II pages 26-27, it was pointed out that where costs are not chargeable directly to a program because the exact charge to be made is not readily identifiable, costs must be prorated. The primary prorations required by the model are instruction costs, custodial costs, and shared school services.

Instruction costs

Teacher salary costs represent a substantial portion of the expenditures made by schoolboards. Consequently, the development of an acceptable allocation of teacher salary costs to programs is very important. Usually, at the time an annual budget is drawn up the following information is obtainable from school reports for the January to June period (the first six months of the year being budgeted).

1. Number of students enrolled in each program (Table I, page 50).
2. Number of Teaching periods in each program (Table II, page 52).
3. Each teacher's contract salary and teaching responsibilities regarding subject and program.

The alternatives available, therefore, for allocating teacher salary costs to programs were as follows:

1. To allocate actual teacher salary cost to programs based on student enrolment;
2. To allocate actual teacher salary costs to programs based on actual time contributed to each program;
3. To allocate average teacher salary costs within each school to programs based on the estimated number of teaching periods in each program.

Alternative number one was not used because programs with low class enrolments would not absorb their full teacher salary costs and vice versa. Table II shows that in the Arts and Science Program the number of pupils as a percentage of total (47.9 per cent) is greater than the number of teaching periods as a percentage of total (43.4 per cent). The opposite is true of the Science, Technology and Trades Program while

the percentages for the Business and Commerce Program are approximately equal.

Alternative number two would have been ideal, but was subject to the following limitations:

1. The administrative procedure involved in allocating specific teacher's salaries to secondary school programs is extremely complex. This procedure necessitates the analysis of each teacher's timetable amounting to approximately 33,500 teaching or non-teaching periods (Table III).
2. An extensive review of teacher's timetables showed that in addition to teaching time, periods were allocated to items such as supervision, department requirements (particularly department heads), study halls, preparation and maintenance, and cafeteria supervision. The allocation of this non-teaching time to programs on an actual basis presented additional problems. The high percentage of non-teaching time in several instances would have necessitated many arbitrary decisions in allocating time. These allocations would nullify the intended additional accuracy of charging each teacher's time to programs.
3. The fiscal year is from January first to December thirty-first. Because the teacher population is highly mobile it is impossible to know until June (half-way through the budget year) the changes which will take place in teachers' salaries for the period September to December.
4. Traditionally the results of teachers' salary negotiations are not known until well into the budget year. Because increases are

not usually uniform in all categories, teachers' salaries are subject to different amounts of adjustment in September.

5. The actual time contributed to programs for the period September to December is unknown until time tables are prepared in mid-summer.

In view of these limitations, direct allocation of teachers' salaries for budget purposes was impossible. Alternative number three was considered an acceptable method.

Instructional costs were prorated in Table VIII, page 62, in accordance with the percentage of teaching periods in each program, shown in Table II.

Custodial Costs

Ideally custodial costs would be allocated to each of the secondary school programs on some direct basis. Unfortunately, many of the services performed by the custodial staff such as cleaning of hallways and common rooms are common to all programs. A detailed analysis of floor area could identify the floor area directly applicable to each program, and the floor area which is shared. Recent studies of custodial costs within the school system have shown that the cost of cleaning a square foot of floor area is practically the same in any part of the school, irrespective of the type of floor covering. If analysis could provide the floor areas pertinent to each program, allocation of custodial costs would present little problem. Because floor area details were not available for this study a formula suggested by the Department of Education for completing financial reports was used. The formula provides for the calculation of the "empirical" number of class rooms in a

secondary school by dividing the number of (1) Arts and Science students by 30 (2) Business and Commercial students by 25, and (3) Science, Technology and Trades students by 15. Table V, page 56, indicates the average daily enrolment for each school (excepting those providing only one program), the empirical number of classrooms, and the empirical number of classrooms expressed as a percentage of total. Custodial costs for each school were prorated in Table VIII, page 64, in accordance with the percentages in Table V.

Shared Services

Each secondary school offering more than one program makes some expenditures which are not easily identified with particular programs. Items such as business services, utilities, and cafeteria services would require a great deal of analysis to determine actual program costs.

Expenditures which were shared are shown in Table VII, page 62, Several items which were included such as text books and instructional supplies, could be charged directly to programs if records were maintained of consumption or usage. Because additional breakdowns were not available for any of the expenditures shown in Table VII, the total cost of shared services was prorated on the basis of average daily enrolment (Table IV, page 54).

Output and Performance

A Program budget requires not only information of a financial nature, but also, where possible, information concerning both output and performance. In the Province of Ontario, there are at the present time, to the writer's knowledge, no generally accepted measures of qualitative

performance by which a school board can measure the effectiveness or performance of its system. There does not seem to be any agreement among educators that even a high percentage of student passes is a criterion of good performance by the system. Good student performance must be due, in part, to the calibre of the student. It is not the purpose of this thesis to comment on the pros and cons of the qualitative measurement of educational performance; however, if the school board or the administration is prepared to accept the results of any test or analysis as a criterion, the pertinent details should be entered as performance criteria in the budget. The measures used in the model, therefore, are the traditional quantitative ones of (1) number of students (2) number of teachers, and (3) pupil-teacher ratio. In prorating teacher salary costs it was necessary to count the number of teaching periods in each program. The number of teaching periods seems also significant as a measure in that it qualifies the student-teacher ratio. A low student-teacher ratio, for example, 10:1, does not by itself indicate that classes are small. If all teachers taught only 50 per cent of the time the average class size would be 20 students; whereas if they taught every period (as in elementary schools) the average class size would, of course, be 10 students.

Procedure-Data Presentation

Table I shows the number of students enrolled for the January to June period and the number of teaching periods for each program. School number 2 offers only the Arts and Science Program whereas school number 8 and school number 10 offer only the two-year occupations course in the Science, Technology and Trades Program. Details were not directly avail-

TABLE I

PUPIL ENROLMENTS AND TEACHING PERIODS PER CYCLE BY PROGRAM
FOR THE PERIOD JANUARY TO JUNE 1968

School Number	Arts & Science		Business & Commerce		Science, Tech. & Trades		Totals	
	Pupils Enrolled	Teaching Periods	Pupils Enrolled	Teaching Periods	Pupils Enrolled	Teaching Periods	Pupils Enrolled	Teaching Periods
1	700	1,019	431	700	239	596	1,370	2,315
2	1,069	1,836					1,069	1,836
3	464	661	565	664	625	840	1,654	2,165
4	426	763	499	879	293	772	1,218	2,414
5			650	1,237	1,525	2,865	2,175	4,102
6	1,207	1,660	153	294			1,360	1,954
7	859	1,204	148	217			1,007	1,421
8					387	1,008	387	1,008
9	254	460	284	450	238	378	776	1,288
10	846	1,352	29	47			875	1,399
11					431	1,050	431	1,050
12	785	1,254	331	694	348	630	1,464	2,578
13								
Totals	6,610	10,209	3,090	5,182	4,086	8,139	13,786	23,530

able which showed each teacher's contribution to programs; consequently the number of teaching periods shown in Table I was obtained by analyzing details of classes shown in each school's Report of the Principal, which is prepared for the Department of Education.

In Table II, pupils enrolled and teaching periods in each program are expressed as a percentage of the total. It is evident in the Arts and Science Program, that in general, the percentage of teaching periods is lower (43.4 per cent) than the percentage of students enrolled (47.9 per cent). The opposite is the case in the Science, Technology and Trades Program with students enrolled accounting for 29.7 per cent of the total, while teaching periods in this program account for 34.6 per cent. Continuing the data from Tables I and II into Table III, criteria of teacher work-load and educational opportunity were established. The number of teachers is shown as 798.7 resulting in a pupil-teacher ratio of 17.3. This figure of 17.3 compares closely with the Provincial average of 17.071 in 1967.[7] Of 33,545 possible teaching periods per cycle, 23,530 periods are used teaching and the remainder of 10,015 or 29.86 per cent is available for non-teaching duties such as preparation and department work. It would be desirable to have a breakdown of non-teaching time by program, but because of the large number of teachers who teach for more than one program, the information was impossible to obtain for this study.

In measuring the output of a school system in terms of students, it is important that the number be comparable from year to year. The usual method of calculation is by average daily enrolment. The estimated average daily enrolment shown in Table IV, page 54, was calculated

TABLE II

PUPIL ENROLMENTS AND TEACHING PERIODS PER CYCLE BY PROGRAM
AS A PERCENTAGE OF TOTAL
FOR THE PERIOD JANUARY TO JUNE 1968

School Number	Arts & Science		Business & Commerce		Science, Tech. & Trades		Totals	
	Pupils Enrolled Per Cent	Teaching Periods Per Cent	Pupils Enrolled Per Cent	Teaching Periods Per Cent	Pupils Enrolled Per Cent	Teaching Periods Per Cent	Pupils Enrolled Per Cent	Teaching Periods Per Cent
1	51.1	44.1	31.5	30.2	17.4	25.7	100.0	100.0
2	100.0	100.0					100.0	100.0
3	28.0	30.5	34.2	30.7	37.8	38.8	100.0	100.0
4	35.0	31.6	40.9	36.4	24.1	32.0	100.0	100.0
5			29.9	30.2	70.1	69.8	100.0	100.0
6	88.7	85.0	11.3	15.0			100.0	100.0
7	85.3	84.7	14.7	15.3			100.0	100.0
8					100.0	100.0	100.0	100.0
9	32.7	35.7	36.6	35.0	30.7	29.3	100.0	100.0
10	96.7	96.6	3.3	3.4			100.0	100.0
11					100.0	100.0	100.0	100.0
12	53.6	48.6	22.6	27.0	23.8	24.4	100.0	100.0
13								
Totals	47.9	43.4	22.4	22.0	29.7	34.6	100.0	100.0

Source: Table I

TABLE III

TEACHER-PUPIL OPERATIONAL STATISTICS AFFECTING QUALITY OF EDUCATION

School Number	Number of Teachers	Pupil Teacher Ratio	Possible[a] Teaching Periods Per Cycle	Actual[b] Teaching Periods	Non-Teaching[c]	
					Periods	Per Cent of Available Time
1	79.0	17.0	3,318	2,315	1,003	30.23
2	51.0	21.0	2,142	1,836	306	14.29
3	86.0	19.0	3,612	2,165	1,447	40.06
4	76.5	15.9	3,213	2,414	799	24.87
5	142.1	15.3	5,968	4,102	1,866	31.27
6	66.5	20.5	2,793	1,954	839	30.04
7	49.0	20.6	2,058	1,421	637	30.95
8	32.0	11.9	1,344	1,008	336	25.00
9	46.6	16.6	1,957	1,288	669	34.18
10	44.0	19.9	1,848	1,399	449	24.30
11	41.0	10.5	1,722	1,050	672	39.02
12	85.0	17.2	3,570	2,578	992	27.79
13	[d]					
Totals	798.7	17.3	33,545	23,530	10,015	29.86

[a]Number of teachers X 42 periods per cycle.

[b]From Table I.

[c]Available for preparation, department work, etc.

[d]New school commencing operations in September 1968.

TABLE IV

ESTIMATED AVERAGE DAILY ENROLMENT STATISTICS - 1968

School	Programs: Arts And Science	Programs: Business and Commerce	Programs: Science Tech. and Trades	Total	
1	670	413	228	1,311	
2	1,087			1,087	
3	466	568	629	1,663	
4	447	523	308	1,278	AVERAGE DAILY ENROLMENT
5		688	1,614	2,302	
6	1,251	159		1,410	
7	839	145		984	
8			436	436	
9	285	319	268	872	SECTION A
10	865	30		895	
11			425	425	
12	803	339	357	1,499	
13	76	60	42	178	
	6,789	3,244	4,307	14,340	
	%	%	%		
1	9.87	12.73	5.29		
2	16.01				
3	6.86	17.51	14.60		AVERAGE DAILY ENROLMENT AS A PERCENTAGE OF THE TOTAL NUMBER OF STUDENTS IN THE PROGRAM
4	6.58	16.12	7.15		
5		21.22	37.48		
6	18.43	4.90			
7	12.36	4.47			
8			10.12		
9	4.20	9.83	6.22		
10	12.74	.92			
11			9.87		SECTION B
12	11.83	10.45	8.29		
13	1.12	1.85	.98		
	100.00	100.00	100.00		
	%	%	%	%	
1	51.1	31.5	17.4	100.0	
2	100.0			100.0	
3	28.0	34.2	37.8	100.0	AVERAGE DAILY ENROLMENT AS A PERCENTAGE OF THE TOTAL NUMBER OF STUDENTS IN THE SCHOOL
4	35.0	40.9	24.1	100.0	
5		29.9	70.1	100.0	
6	88.7	11.3		100.0	
7	85.3	14.7		100.0	
8			100.0	100.0	
9	32.7	36.6	30.7	100.0	
10	96.6	3.4		100.0	
11			100.0	100.0	SECTION C
12	53.6	22.6	23.8	100.0	
13	42.7	33.7	23.6	100.0	
	47.3	22.6	30.1	100.0	

by (1) multiplying the number of pupils enrolled in Table I by 60 per cent, (2) multiplying the estimated number of pupils for September by 40 per cent, and (3) adding the results of (1) and (2). The average daily enrolment for each program is also shown in Table IV as a percentage of the total number of students in the program (Section B) and the total number of students in each school (Section C). Sections B and C point out much more forcefully than Section A the contribution, in terms of students, of each program within the school and each school within the program. In conjunction with per student costs for each school (and an intimate knowledge of the school system), additional analyses could be performed to assist the administration in determining optimum school sizes (economies of scale), or alternatively, the additional cost in operating sub-optimum units.

The results of the study of county schools mentioned on page 19, and the results of the writer's investigations on page 77, indicate that at least there is a high probability that analysis can assist in obtaining economies of scale.

Table V shows the empirical number of class rooms used for prorating custodial costs. Information concerning the proration of custodial costs has already been presented.

Financial Plan

Budget Reconstruction - Support and Other Programs

To achieve the stated purpose of the study a reorganization of the budget was necessary. Table VI, page 59, shows the restatement of expenditures on a program basis. The amount appropriated in the 1968

TABLE V

EMPIRICAL NUMBER OF CLASSROOMS FOR
PRORATING CUSTODIAL COSTS

School	Arts And Science	Business And Commerce	Science Tech. and Trades	Total	
1	670	413	228	1,311	AVERAGE DAILY ENROLMENT
2	All Arts and Science				
3	466	568	629	1,663	
4	447	523	308	1,278	
5		688	1,614	2,302	
6	1,251	159		1,410	
7	839	145		984	
8	All Science, Technology and Trades				
9	285	319	268	872	
10	All Arts and Science				
11	All Science, Technology and Trades				
12	803	339	357	1,499	
13	76	60	42	178	
1	22.3	16.5	15.2	54.0	EMPIRICAL NUMBER OF CLASSROOMS A.D.E. divided by: Arts & Science 30 Business & Commerce 25 Science, Tech. & Trades 25
2	All Arts and Science				
3	15.5	22.7	41.9	80.1	
4	14.9	20.9	20.5	56.3	
5		27.5	107.6	135.1	
6	41.7	6.4		48.1	
7	28.0	5.8		33.8	
8	All Science, Technology and Trades				
9	9.5	12.8	17.9	40.2	
10	All Arts and Science				
11	All Science, Technology and Trades				
12	26.8	13.6	23.8	64.2	
13	2.5	2.4	2.8	7.7	
1	41.3	30.6	28.1	100.0	EMPIRICAL NUMBER OF CLASSROOMS AS A PERCENTAGE OF TOTAL
2	100.0			100.0	
3	19.4	28.3	52.3	100.0	
4	26.5	37.1	36.4	100.0	
5		20.4	79.6	100.0	
6	86.7	13.3		100.0	
7	82.8	17.2		100.0	
8			100.0	100.0	
9	23.6	31.8	44.6	100.0	
10	100.0			100.0	
11			100.0	100.0	
12	41.7	21.2	37.1	100.0	
13	32.5	31.2	36.3	100.0	

budget under study is shown as a total for each section and the amounts allocated to each program are shown under the program headings and totalled. A summary of the results of Table VI is shown in Table X, page 71. All support programs were prorated to the Arts and Science, Business and Commerce, and Science, Technology and Trades Programs in Table XI, page 72. The expenditure shown for each activity in Table VI is, of course, the aggregate of all line items shown in the original budget.

A program budget attempts where possible to consolidate objects of expenditure into the cost of activities contributing to program fulfillment together with some quantitative or qualitative measure which shows the contribution of the activity to the program. Unfortunately extensive analyses showing, for example, the number of students, participating in, or responsible for, expenditures in certain activities were not available. In practice, the model could be expanded to show cost per student for such items as guidance, medical, dental, and psychological services based on students counselled or examined as opposed to the average cost used in this model.

The prime objective in Table VI was to allocate the expenditures applicable to each of the programs under study, and where this was not possible, to the combined programs under the heading "Secondary Schools." The items placed under the heading "Secondary Schools" (with the exception of debenture maturities) were prorated on a basis indicated in the table to each program in Table XI.

With the degree of specialization now evident in school systems a program budgeting system must recognize program costs on the one hand,

and administrative organization on the other. For example, the Superintendent of Curriculum will probably be responsible for curriculum in both secondary schools and elementary schools, special education, and adult education. The advantage of the program budget in breaking down the total curriculum budget into program costs (such as in Table VI) is quite obvious.

Secondary School Budgets

Each of the thirteen secondary school budgets was analyzed and divided into four sections:

1. Shared Services.

   Several activities occur in a secondary school which cannot be identified specifically with any of the programs in the model. Consequently, these items were segregated and included in Table VII, page 62. The aggregate of the shared services for each school was prorated to each program in Table VIII, page 64, based on an average daily enrolment.

2. Arts and Science Program.

   All costs which could be associated directly with the Arts and Science Program were included in the appropriate section of Table IX, pages 67-68.

3. Business and Commerce Program.

   All costs which could be associated directly with the Business and Commerce Program were included in the appropriate section of Table IX, pages 67-68.

TABLE VI

DISTRIBUTION OF 1968 BUDGETED EXPENDITURES TO SUPPORT AND OTHER PROGRAMS

DESCRIPTION		PROGRAMS				
		Admin.	Sc. Tech. & Trades	Education Centre	Public Schools	Secondary[a] Schools
		$	$	$	$	$
General Administration						
Trustees		13,615	3,240			
Legal		60,000				
Administration Building				2,500		
Audit		4,400				
Association Fee		6,000				
Convention Fees		4,600				
Printing		8,000				
Public Relations		10,000				
Travel		500				
Receptions		3,200				
Property Tax		200				
Secretarial		2,400				
Tax Credits					90,000	65,000
Land Purchase					193,250	229,750
Improvements				5,000	63,228	
Building Additions					60,678	
Portable Classrooms					200,000	
New Buildings						203,000
Building-Workshop & Warehouse					153,000	147,000
Scholastic Awards						2,500
Assumed on Annexation					3,444	
Principal & Interest					1,384,215	989,791
U.S. Exchange					3,300	7,600
Bank Charges					4,668	3,332
Interest on Advances					40,000	50,000
Employee Benefits		596,784				
Totals	$ 4,614,195	709,699	3,240	7,500	2,195,783	1,697,973

TABLE VI (continued)

DESCRIPTION	PROGRAMS						
		Cont. Educ.	Architec. Services	Admin.	Sc. Tech. & Trades	Public Schools	Secondary[a] Schools
		$	$	$	$	$	$
Office of the Director and Executive Secretary							
Administration				101,028			7,000
Totals	$ 108,028			101,028			7,000
Superintendent of Curriculum							
Mathematics						9,296	
Art						61,227	
Audio-Visual						103,468	
Educational T.V.						7,000	374,655
Home Economics						13,637	
Industrial Arts						16,293	
Library - Books						192,000	
Library - Other						87,054	
Music						52,403	
Oral French						10,664	
Outdoor School						8,008	
Physical Education						25,336	
General Expense						541,175	29,140
Equipment Repair					7,000		
Supervision							204,262
Architectural			155,880				
Continuing Education		186,440					
Totals	$ 2,084,938	186,440	155,880		7,000	1,127,561	608,057

[a]Common Services for Subsequent Distribution to Secondary School Programs.

TABLE VI (continued)

DESCRIPTION		PROGRAMS				
		Business Services	Student Transport'n	Education Centre	Public Schools	Secondary[a] Schools
		$	$	$	$	$
Student Services						
Guidance					45,282	34,580
Auxiliary Education					29,275	
Remedial Reading					945	
Attendance					28,750	
Medical					206,904	97,367
Dental					175,116	82,409
Psychological					135,916	61,960
Totals	$ 898,504				622,188	276,316
Superintendent of Instructional Personnel						
Instruction					9,108,053	
Professional Development					37,800	26,000
Supervision					223,235	
Totals	$9,395,088				9,369,088	26,000
Superintendent of Business Services						
Superintendent's Office		49,023				
Finance		82,923				
Purchasing		58,001				
Warehousing		77,057				
Data Processing		109,864				
Administrative Services		197,490				
Stud. Transport'n.-Public			149,500			
Stud. Transport'n.-Sec.Sch.			405,400			
Duplicating		14,670				
Office Administration					179,385	
Custodial Administration		83,109		41,783		
Custodial Services					1,034,504	
Plant Maintenance Services		162,288		23,674	784,024	
Portable Classrooms						2,000
Totals	$3,454,695	834,425	554,900	65,457	1,997,913	2,000

TABLE VII

SUMMARY OF BUDGETED SHARED SERVICE COSTS FOR SECONDARY SCHOOLS, 1968

DESCRIPTION	SCHOOLS						
	1	2	3	4	5	6	7
	$	$	$	$	$	$	$
Shared Services							
Audio-Visual	1,152	All	7,870	609	1,746	1,255	400
Auditorium					2,725		
Cafeteria Services		Arts			400	400	400
Commencement	400	And	650	400	350		400
Extra Curricular	4,800	Science	4,897	4,825	5,055	4,835	4,375
Field Trips	675	Program	850	609	1,090	725	500
Instructional Supplies	13,273		19,747	13,002	26,852	9,259	10,765
Late Bus Services	4,600					1,800	
Library	969		365	246	2,080	1,125	3,010
Lunchroom Supervision	1,200		1,200	1,200	1,600	1,600	400
Pictures	400		500	200	400	400	300
Physical Education	2,921		5,274	2,435	8,211	3,394	2,150
Reception	400		600	400		400	
Scholastic Awards	500			455			
Swimming					1,700		
Guidance Services	872		1,480	770	1,950	955	785
Land, Buildings & Equipment[a]	5,320		27,900	4,785	60,191	18,517	5,879
Utilities	24,360		23,730	21,500	43,900	18,900	14,500
Laundry	750		873	850	1,900	900	615
Business Services	43,681		54,511	45,351	99,128	37,532	54,981
Text Books[b]	17,500	7,000	18,500	7,500	19,849	13,240	6,500
Library Books	5,487	5,012	8,698	5,570	8,500	5,305	1,800
Television	3,500	3,500	3,500	3,500	15,520	3,500	4,080
Sub Total	$ 132,760	15,512	181,145	114,207	303,147	124,042	111,840

TABLE VII (continued)

DESCRIPTION	SCHOOLS 8	9	10	11	12	13	Total
	$	$	$	$	$	$	$
Shared Services							
Audio-Visual	All	388	All[c]	All	608	500	
Cafeteria Services	Science	400	Arts	Science	400		
Commencement	Tech.	300	And	Tech.	400		
Extra Curricular	And	4,632	Science	And	4,831	2,277	
Field Trips	Trades	388	Program	Trades	730	100	
Instructional Supplies	Program	11,368		Program	12,553	8,500	
Late Bus Service		2,700			1,800	1,500	
Library		3,320			2,866	3,000	
Lunchroom Supervision		800			1,600	300	
Pictures		400			400	500	
Physical Education		3,827			3,166	1,500	
Reception						400	
Scholastic Awards		500			500		
Guidance Services		460			408	500	
Land, Build. & Equip.[a]		4,888			11,360		
Utilities		24,360			24,500		
Laundry		815			965		
Business Services		33,932			43,840	17,754	
Text Books	3,000	13,720	8,500	3,000	14,500	15,000	147,809
Library Books	4,000	7,400	4,281	3,000	5,600		64,653
Television	3,500	3,500	3,500	3,500	4,100		55,200
Sub Total	$ 10,500	118,098	16,281	9,500	135,127	51,831	1,323,990

[a]Information was not available to allocate any part of this expenditure to programs.

[b]This expense should be charged to programs on an actual expense basis. Because specific information was not available proration method was used.

[c]Except for one class of business and commerce students, division of costs is based on enrolment in Table VIII

TABLE VIII

PRORATION OF INSTRUCTIONAL, CUSTODIAL AND COMMON SERVICE COSTS

School Number	Expenditure	Arts & Science	Business & Commerce	Science Tech. & Trades
	$	$	$	$
	Instruction			
1	775,030	341,788	234,059	199,183
2	570,404	570,404		
3	875,356	266,984	268,734	339,638
4	785,483	248,213	285,916	251,354
5	1,426,159		430,700	995,459
6	665,988	566,090	99,898	
7	526,312	445,786	80,526	
8	318,438			318,438
9	482,585	172,283	168,905	141,397
10	469,902	453,925	15,977	
11	408,857			408,857
12	839,707	408,097	226,721	204,889
13	123,540	40,151	38,544	44,845
Total	$ 8,267,761	3,513,721	1,849,980	2,904,060
	Custodial[a]			
1	79,665	32,902	24,377	22,386
2	70,465	70,465		
3	86,928	16,864	24,601	45,463
4	75,369	19,973	27,962	27,434
5	186,291		38,003	148,288
6	68,183	59,115	9,068	
7	57,291	47,437	9,854	
8	48,532			48,532
9	76,187	17,980	24,228	33,979
10	50,577	50,577		
11	52,711			52,711
12	82,334	34,333	17,455	30,546
13	6,163	2,003	1,923	2,237
Total	$ 940,696	351,649	177,471	411,576

TABLE VIII (continued)

School Number	Expenditure	Arts & Science	Business & Commerce	Science Tech. & Trades
	$	$	$	$
	Shared Services			
1	132,760	67,840	41,819	23,101
2	15,512	15,512		
3	181,145	50,721	61,952	68,472
4	114,207	39,972	46,711	27,524
5	303,147		90,641	212,506
6	124,042	110,025	14,017	
7	111,840	95,400	16,440	
8	10,500			10,500
9	118,098	38,618	43,224	36,256
10	16,281	15,727	554	
11	9,500			9,500
12	135,127	72,428	30,539	32,160
13	51,831	22,132	17,467	12,232
Total	$ 1,323,990	528,375	363,364	432,251

Proration Method

Instruction-Teaching Periods (Table II)
Custodial-Empirical Number of Classrooms (Table V)
Shared Services-Average Daily Enrolment (Table IV)

[a]Normally this expenditure would be charged to programs on a square footage basis or as a result of an analysis of usage. Because specific information was not available a proration method was used.

4. Science, Technology and Trades Program.

All costs which could be associated directly with the Science, Technology and Trades Program were included in the appropriate section of Table IX, pages 67-70.

The proration of instructional and custodial costs shown in Table VIII has previously been explained in the section "Prorating Expenditures to Programs".

Debenture maturities could be identified with each school and in most cases with each of the programs under study. Since 1960 the final approval for construction given by the Ontario Department of Education has shown specifically the cost, the approved amount for grant purposes, and the debentures to be issued for the academic portion (Arts and Science). The remainder of cost and debentures issued pertained to vocational facilities (Business and Commerce; Science, Technology and Trades). From 1960 to 1962 vocational facilities were constructed at no cost to the Board of Education (100 per cent grant). School number 1 and school number 12 were built under this arrangement; consequently all outstanding debentures and grant approvals for these schools are applicable to the Arts and Science Program.

From 1962 to the present time, vocational facilities have been constructed on a 75 per cent cash grant basis with the remaining 25 per cent being raised by debentures. An analysis of each final approval for construction and the debenture issue provided the writer with information for charging debenture maturities to programs.

A division between the Business and Commerce Program and the Science, Technology, and Trades Program of each debenture maturity was

TABLE IX

SUMMARY OF PROGRAM COSTS FOR SECONDARY SCHOOLS-1968

DESCRIPTION	SCHOOLS						
	1	2	3	4	5	6	7
	$	$	$	$	$	$	$
Arts & Science							
Arts & Crafts	1,501	All		958	No		540
Home Management	1,601	Arts	1,173	1,860	Arts	1,426	1,465
Music	6,625	And	4,142	7,134	And	5,863	5,443
Science, Chemistry	5,616	Science	5,938	4,145	Science	4,035	3,330
Industrial Arts		Program			Program	2,400	1,900
Total Curriculum	15,343	138,298	11,253	14,097		13,724	12,678
Custodial	32,902	70,465	16,864	19,973		59,115	47,437
Instruction	341,788	570,404	266,984	248,213		566,090	445,786
Sub Total	$ 390,033	779,167	295,101	282,283		638,929	505,901
Business & Commerce							
Instructional Supplies	7,878	No	16,412	21,840		2,049	900
Marketing		Business			12,600		
Secretarial		And			10,352		
Clerical		Commerce			62,641		
Data Processing					4,156		
Rentals						650	
Total Curriculum	7,878		16,412	21,840	89,749	2,699	900
Custodial Services	24,377		24,601	27,962	38,003	9,068	9,854
Instruction	234,059		268,734	285,916	430,700	99,898	80,526
Sub Total	$ 266,314		309,747	335,718	558,452	111,665	91,280

TABLE IX (continued)

DESCRIPTION	SCHOOLS						
	8	9	10	11	12	13	Total
	$	$	$	$	$	$	$
Arts & Science							
Curriculum							
Arts & Crafts	No	1,353	All[a]	No	1,339	380	
Home Management	Arts	1,550	Arts	Arts	3,641	700	
Music	And	4,952	And	And	5,793	1,000	
Science, Chemistry	Science	3,590	Science	Science	4,340	2,000	
Industrial Arts	Program		Program	Program			
Total Curriculum		11,445	89,860		15,113	4,080	325,891
Custodial Services		17,980	50,577		34,333	2,003	351,649
Instruction		172,283	469,902		408,097	40,151	3,529,698
Sub Total		$ 201,708	610,339		457,543	46,234	4,207,238
Business & Commerce							
Curriculum							
Instructional Supplies	No	3,436	One[b]	No	6,905	1,250	
Data Processing	Business And Commerce Program	1,500	Class Only	Business And Commerce Program			
Total Curriculum		4,936			6,905	1,250	152,569
Custodial Services		24,228			17,455	1,923	177,471
Instruction		168,905			226,721	38,544	1,834,003
Sub Total		$ 198,069			251,081	41,717	2,164,043

TABLE IX (continued)

DESCRIPTION	SCHOOLS						
	1	2	3	4	5	6	7
	$	$	$	$	$	$	$
Science-Trades & Technology							
Curriculum							
Auto-Mechanics	1,008	No	1,573	2,504	5,550	No	No
Drafting	1,160	Science	1,254	2,615	2,800	Science	Science
Electrical	910	Tech.	5,242	2,087	21,354	Tech.	Tech.
Machine Shop	1,291	And	6,446	2,016	8,333	And	And
Plumbing	1,400	Trades			2,864	Trades	Trades
Refrigeration	880	Program	10,780	1,323	3,567		
Sheet Metal	2,662			1,550	9,027		
Smock Rental	325		500	650	800		
Welding	1,395		1,879	2,749	4,347		
Woodwork	1,824		3,395	2,515	4,905		
Dressmaking			232		3,577		
Electronic			6,022		15,007		
Food Processing				1,695	3,951		
Graphic Art					5,187		
Vocational Music					7,423		
Nursing					573		
Educational Television					4,511		
Special Art					16,840		
Science-Chemistry					6,784		
Science-Physics					8,252		
Total Curriculum	12,855		37,323	19,704	135,652		
Custodial Services	22,386		45,463	27,434	148,288		
Instruction	199,183		339,638	251,354	995,459		
Sub Total	234,424		422,424	298,492	1,279,399		
Total All Programs	$ 1,023,531	794,679	1,208,417	1,030,700	2,140,998	874,636	709,021

TABLE IX (continued)

DESCRIPTION	SCHOOLS 8	9	10	11	12	13	Total
	$	$	$	$	$	$	$
Science-Trades & Technology Curriculum							
Auto Mechanics	All	2,426	No	All	3,214	700	
Drafting	Science	1,320	Science	Science	962	770	
Electrical	Tech.	1,089	Tech.	Tech.	2,975	675	
Electronic	And	1,178	And	And	2,040	675	
Food Processing	Trades		Trades	Trades	3,150		
Graphic Art		2,245					
Machine Shop		2,380			2,154	1,000	
Plumbing					2,577		
Refrigeration					4,627		
Sheet Metal					2,990	1,000	
Smock Rental		200			400	50	
Welding		2,132			4,118	975	
Woodwork		2,337			4,054	1,000	
Total Curriculum	94,060	15,307		126,344	33,261	6,845	481,351
Custodial Services	48,532	33,979		52,711	30,546	2,237	411,576
Instruction	318,438	141,397		408,857	204,889	44,845	2,904,060
Sub Total	461,030	190,683		587,912	268,696	53,927	3,796,987
Total All Programs	$ 471,530	708,558	626,620	597,412	1,112,447	193,709	11,492,258

[a]Except for one class of business and commerce students, division of cost is based on enrolment in Table VIII.

[b]Division of costs with the Arts and Science Program is based on enrolment in Table VIII.

TABLE X

SUMMARY OF SUPPORT AND OTHER PROGRAM COSTS

PROGRAM	General Admin.	Office of Director	Student Services	Superintendents			Total Program Costs
				Curriculum	Instructional	Business Personnel	
	$	$	$	$	$	$	$
Administration	709,699	101,028					810,727
Science, Tech. & Trades	3,240			7,000			10,240
Education Centre	7,500					65,457	72,957
Public Schools	2,195,783		622,188	1,127,561	9,369,088	1,997,913	15,312,533
Secondary Schools	1,697,973	7,000	276,316	608,057	26,000	2,000	2,617,346
Continuing Education				186,440			186,440
Architectural Services				155,880			155,880
Business Services						834,425	834,425
Student Transportation						554,900	554,900
Totals	$ 4,614,195	108,028	898,504	2,084,938	9,395,088	3,454,695	20,555,448

[a]Excluding direct program costs to Arts & Science, Business and Commerce, and Science, Technology and Trades, shown in Tables VII and IX.

Source: Table VI

TABLE XI

PRORATION OF SUPPORT PROGRAMS

PROGRAM	Total Expenditure	Proration Method	Other Programs	Arts & Science	Business & Commerce	Science Tech. & Trades
	$		$	$	$	$
Administration	810,727	A*	465,357	121,609	69,723	154,038
Science, Tech. & Trades	10,240	Direct				10,240
Education Centre	72,957	A*	41,877	10,944	6,274	13,862
Public School	15,312,533	Direct	15,312,533			
Secondary Schools						
General Administration						
-Capital	1,050,723	Table XII		718,845	124,157	207,721
-Operating	647,250	A*		227,832	130,745	288,673
Office of Director	7,000	B*		3,290	1,610	2,100
Student Services	276,316	B*		129,869	63,553	82,894
Curriculum	608,057	Table II,C*		263,897	133,773	210,387
Instruction	26,000	Table II,C*		11,284	5,720	8,996
Business Services	2,000	A*		704	404	892
Business Services	834,425	A*	478,960	125,163	71,761	158,541
Transportation	554,900	Direct	554,900			
Continuing Education	186,440	Direct	186,440			
Architectural Services	155,880	Direct	155,880			
Totals	$ 20,555,448		17,195,947	1,613,437	607,720	1,138,344

Source: Table X

A* Empirical number of classrooms. Department of Education formula divide enrolments by: (1) Elementary-35 (2) Arts & Science-30 (3) Business and Commerce-25 (4) Science, Technology & Trades-15.

B* Average Daily Enrolment (Table IV).

C* Arts and Science-43.4%; Business and Commerce 22.0%; Science, Technology and Trades-34.6% (Table II).

based on the type of facilities constructed. Since 1960, all vocational facilities have been constructed with the aid of cash grants; consequently, there are no construction grant approvals (payable through General Legislative Grants) applicable to vocational facilities.

The position taken by the writer in designing the model was that only the cost of acquiring school buildings and equipment which is payable locally, either in cash or through debentures, is chargeable to programs. No attempt was made to charge non-local items such as the value given by the Province (amortization of the vocational cash grant).

Based on information provided by senior officials of the administration, the few debenture maturities applicable to construction prior to 1960 were allocated to programs on an estimated basis.

The resulting schedule showing the program cost of debenture maturities is shown in Table XII, page 74.

TABLE XII

PRORATION OF DEBENTURE MATURITIES, 1968
BASED ON AN ANALYSIS OF ACTUAL CONSTRUCTION COST

Debenture Number	Total Amount Matured	School		Arts & Science	Business & Commerce	Science Tech. & Trades
		Number	Amount			
	$		$	$	$	$
1,2,3	67,294	5	67,294		20,187	47,107
4	196,650	12	8,259	2,477	2,833	2,949
		7	67,059	57,000	10,059	
		10	44,836	43,356	1,480	
		2	61,551	61,551		
		4	14,945	5,231	6,127	3,587
5	55,137	6	55,137	55,137		
6	197,100	3	6,110	1,711	2,077	2,322
		12	98,944	98,944		
		1	92,046	92,046		
7	43,527	5	15,140			15,140
		4	28,387	23,561	3,040	1,786
8	73,263	3	21,980	14,064	3,958	3,958
		11	20,513			20,513
		9	30,770	21,231	5,231	4,308
9	20,025	3	20,025	5,607	6,809	7,609
10	76,632	3	76,632	21,457	26,055	29,120
11	24,605	3	24,605	6,889	8,366	9,350
12	81,833	6	81,833	81,833		
13	10,232	6	10,232	10,232		
14	20,882	3	20,882	13,364	3,759	3,759
15	16,924	11	16,924			16,924
16	43,477	9	43,477	29,999	7,391	6,087
17	46,965	6	4,884	2,442	2,442	
		9	42,081	29,036	7,153	5,892
18	15,245	8	15,245			15,245
Sub Total	989,791		989,791	677,168	116,967	195,656
Interest and Redemption Charges			60,932	41,677	7,190	12,065
Total			$1,050,723	718,845	124,157	207,721

Table XIII provides a summary of all costs applicable to various programs as follows:

1. Arts and Science Program	$ 6,349,050
2. Business and Commerce Program	3,135,127
3. Science, Technology and Trades Program	5,367,582
4. Total cost of combined Programs	14,851,759

By dividing program costs by the average daily enrolment shown in Table IV an average program cost per student was calculated. The results are shown in Table XIII and are as follows:

	Average Cost Per Student
1. Arts and Science Program	$ 935.20
2. Business and Commerce Program	966.44
3. Science, Technology and Trades Program	1,246,25

Program Cost Per Student by School

In chapter II it was quoted on page 20 that the objective of the New York school system is to "bring costs down to the school level" so that the administration will know the costs for each school.

Table XIV shows Program costs by school for the Science, Technology and Trades Program for school numbers one to eleven. Individual school costs are taken from Table VIII, shared services; Table IX, direct program costs; and Table XI, prorated share of support programs. Each item is then divided by the average daily enrolment to provide a per student cost in each school. The results are rather illuminating for comparison purposes. School number eleven had the highest cost per student. From an analysis point of view it is an easy school to con-

TABLE XIII

SUMMARY OF ARTS AND SCIENCE, BUSINESS AND COMMERCE, AND SCIENCE, TECHNOLOGY AND TRADES PROGRAMS

DESCRIPTION	Source Table	Total	Arts And Science	Business And Commerce	Science Tech. & Trades
		$	$	$	$
All Support Programs	XI	3,359,501	1,613,437	607,720	1,138,344
Secondary School, Shared Services	VIII	1,323,990	528,375	363,364	432,251
Secondary School, Arts and Science-Direct	IX	4,207,238	4,207,238		
Secondary School, Business and Commerce-Direct	IX	2,164,043		2,164,043	
Secondary School, Science, Technology and Trades-Direct	IX	3,796,987			3,796,987
Total		$ 14,851,759	6,349,050	3,135,127	5,367,582
Total Number of Students	IV	14,340	6,789	3,244	4,307
Average Cost		$1,035.69	935.20	966.44	1,246.25

TABLE XIV

PROGRAM COSTS BY SCHOOL-SCIENCE, TECHNOLOGY AND TRADES PROGRAM

DESCRIPTION	Source Table	SCHOOLS 1	3	4	5	8	9	11
		$	$	$	$	$	$	$
Shared Services	VIII	23,101	68,472	27,524	212,506	10,500	36,256	9,500
Direct Program Costs	IX	234,424	422,424	298,492	1,279,399	461,030	190,683	587,912
Proration of Support Programs[a]	XI	60,260	166,244	81,404	426,580	115,235	70,832	112,328
Total Cost		$ 317,785	657,140	407,420	1,918,485	586,765	297,771	709,740
Number of Students In Program	IV	228	629	308	1,614	436	268	425
		$	$	$	$	$	$	$
Cost Per Student								
Shared Services		101.32	108.85	89.36	131.66	(	135.29	(
Direct Program Costs		1,028.18	671.58	969.13	792.69	(1,081.49	711.50	(1,405.68
Proration Of Support Programs		264.30	264.30	264.30	264.30	264.30	264.30	264.30
Total Cost		$ 1,393.80	1,044.73	1,322.79	1,188.65	1,345.79	1,111.09	1,669.98

[a]Proration to schools made on the basis of average daily enrolment for each school (Table IV) x $\frac{\$1,138,344}{4,307}$ (Table XI) (Table IV)

sider. The school is restricted to the Science, Technology and Trades Program and offers only the two-year occupations course. Obviously it is a specialized school. It provides education for students who did not graduate from grade 8. Had they graduated they would be in the four or five-year course of the program and could not attend school number eleven.

Table III shows that this school has a pupil teacher ratio of 10.5 to 1 and consequently it will have high teacher cost per student. In actual fact with an average daily enrolment of 425 the total teaching salary cost per student is $962.00. Other direct school costs amount to $443.68 per student and the cost per student for support programs is $264.30 for a total of $1,669.98.

By comparison, school number five is probably one of the largest, best equipped schools in the Province of Ontario. An examination of the Science, Technology and Trades section of Table IX indicates that a great many options are offered. The school has 37.48 per cent of all students in the Science, Technology and Trades Program and offers both the four year and five-year course, i.e., students who will become skilled tradesmen and those proceeding to further education. It can be seen from Table XIV that the cost per student is $1,188.65, a clear indication that less (approximately $481.00 per year) is being spent on students bound for university than those students who probably will take unskilled work. The question of whether this policy is desirable or undersirable is not at issue here. It is the writer's position, however, that only by an accurate presentation of student costs per school can decisions concerning program expenditures be rationalized.

Provincial Assistance

Boards of Education in the Province of Ontario derive revenues primarily from two sources: (1) local taxation and (2) Provincial assistance. Other revenues become available from the sale of fixed assets, fees to other schoolboards and individuals, etc. As elected representatives of the community, schoolboard members frequently make decisions based on a proposal's cost to the community. It is important, therefore, that expenditures be considered in the light of the Provincial assistance available for the proposal and the cost to the local taxpayer. The grant plan of Ontario supplements local resources to the maximum of the foundation plan or foundation level. General Legislative Grants for operating purposes[8] are based in all cases on the previous year's expenditures or average daily enrolment. The main purposes of Provincial Grants for operating purposes fall under four main categories.

1. Stimulation

   Stimulation grants are used by the Province to encourage boards to adopt or promote a certain action or program. Stimulation is one of the earliest purposes to which provincial grants were directed. The grants are based in most cases on expenditures of the previous year.

2. Equalization

   Equalization grants are paid by the Province in an attempt to reduce the extreme differences existing among districts with respect to the burden of local taxation. The equalization principle has the objective of equalizing not the amount collected, nor the rate imposed, but the burden which the taxation imposes

upon the community. The relative ability to pay is measured by the assessment per classroom unit on a provincially equalized basis.

3. Basic Tax Relief

The foundation plan was introduced into Ontario in 1964 and provides provincial assistance in accordance with a predetermined level. The basic tax relief grant is a grant of a fixed amount based on average daily enrolment, and together with the equalization grant maximum forms the foundation level. In 1968 the foundation level is as follows:

	Arts And Science Student	Business And Commerce Student	Science Tech. And Trades Student
Basic Tax Relief Grant	$ 200.	$ 280.	$ 280.
Equalization Grant*	$ 265.	$ 320.	$ 320.
	$ 465.	$ 600.	$ 600.

* which is in excess of 3.5 mills multiplied by the Provincial Equalized Assessment maximum.

4. Capital Grant

Every schoolboard is paid a grant on the basis of a percentage which fluctuates from year to year multiplied by the portion of the expenditures recognized for grant purposes for transportation, debenture maturities, capital expenditures from revenue funds, and fees paid to other school boards.

Table XV shows the stimulation grants applicable to all secondary school programs. The grants are calculated on the aggregate expenditures and enrolments of all three programs. If program expenditures

TABLE XV

PRORATION OF PROVINCIAL STIMULATION GRANTS TO PROGRAMS

DESCRIPTION	A.D.E.[d]	1968 To be Provided Locally	1968 Estimated Provincial Assistance	1968 Budget	1967 Expenditure Actual	1967 Expenditure Eligible Portion For Grant	1967 Expenditure Maximum Expend. Eligible
	$	$	$	$	$	$	$
All Secondary Schools							
Stimulation Items							
Library Books (Total A.D.E.)	12,742	5,495	59,158	64,653	84,151	84,151	127,416
Text Books-Grades 9 & 10	6,860	36,732	55,628	147,809	74,482	123,620	123,620
-Grades 11 & 12	4,760		55,449		58,765		
Television	11,776	52,830	2,370	55,200	3,371	3,371	20,608
Association Fees	11,780	1,271	649	1,920[a]	1,767	923	923
Municipal Inspectorates	N/A	57,542	32,458	90,000[b]	82,045	46,170	46,170
Classrooms-Agriculture, Home Economics & Industrial Arts	N/A		26,363[c]		26,363	26,363	26,363
Totals		$ 153,870	232,075	359,582	330,944	284,598	345,100
Proration On A Student Basis							
Arts & Science 51.2%	6,031	78,781	118,823	184,106	169,443	145,714	176,691
Business & Commerce 23.0%	2,715	35,390	53,377	82,704	76,117	65,457	79,373
Science, Tech. & Trades 25.8%	3,035	39,699	59,875	92,772	85,384	73,427	89,036

[a] 32% of $6,000. Association Fees shown in Table VI.
[b] Estimated.
[c] Not related to expenditure.
[d] In 1967 upon which the 1968 grant is based.

on which the grant is based could be readily identified, then the grant could be prorated to programs in the same ratio. It is evident from Table XV that stimulation grants are paid on various figures of average daily enrolments; enrolment for the library book grant includes non-resident students whereas enrolment for the textbook grant does not include Grade 13 students. To avoid extensive allocations with insignificant amounts stimulation grants were prorated to programs based on resident average daily enrolment.

Table XV is particularly useful in maximizing provincial stimulation grants. The table highlights, for example, the loss in 1968 grant (providing it was possible and desirable to make the full expenditure of $20,608. in 1967) of several thousands of dollars on television sets. It can be seen that the expenditure in 1967 was $3,371. on which a grant will be received of $2,370. in 1968. The maximum eligible expenditure was $20,608. In 1968 the appropriation for television sets is $55,200., a figure considerably beyond the grant ceiling, if the grant of $1.75 per student remains the same. By planning (or programming) the total expenditure of $58,571. (55,200 + $3,371) over the two year period, approximately $45,000 of the expenditure of $58,571. would be covered for grant purposes, with the result that Provincial Assistance would have been $11,641. higher: $[(\$20,600 + \$24,400) \times 70\% = \$31,500] - [(\$3,371 + \$25,000) \times 70\% = \$19,859] = \$11,641.$

It is also evident from this table that the ceiling for library books of $127,416. is much higher than the expenditure in 1967 of $84,151. Because the appropriation for 1968 is still well below the ceiling amount any loss is purely theoretical. It appears that a policy decision has

been made not to take full advantage of the provincial library book stimulation grant. The table does highlight, however, the additional amount which could be spent on library books and which would be eligible for grant purposes. The amounts for Basic Tax Relief Grant, Equalization Grant and Capital Grants are shown in Table XVI, page 84.

Cost of Education and Revenues

The information which has been developed in the preceding tables has been brought together in summarized form in Table XVI, page 84, to show the total cost and revenue for the Arts and Science Program.

Costs are shown for support programs, shared school services, and direct program costs together with the amount per student for each category, based on the estimated average daily enrolment of 6,789 students. Also, the amounts are expressed in percentages. The form of presentation of revenues in Table XVI is designed to highlight several important points.

The legislation authorizing schoolboards to charge fees to other schoolboards (Section 100, Sub-section a, of the Schools Administration Act) specifies that miscellaneous revenues must be deducted from total cost before non-resident fees aretcalculated. Consequently, miscellaneous revenue is deducted from total program cost to show a net cost of education, of $912.21 per student. Table XVI shows that there are 340 non-resident students in the program for which $310,151 of fee revenue will be received.

The writer feels it important to separate the amount of local tax levy to meet the cost of enrolment growth from the levy required to service the number of students already in the school system. Because current

TABLE XVI

COST OF EDUCATION AND REVENUE-ARTS AND SCIENCE PROGRAM

EXPENDITURES AND REVENUE	Source Table	Number of Students	Amount	Amount Per Student	Per cent
			$	$	
Expenditures					
Support Programs	XIII	6,789[a]	1,613,437	237.66	25.41
Shared School Services	XIII	6,789	528,375	77.83	8.32
Direct Program Cost	XIII	6,789	4,207,238	619.71	66.27
Total Program Cost	XIII	6,789	6,349,050	935.20	100.00
Revenues					
Miscellaneous		6,789	156,099	22.99	
Net Cost of Education		6,789	6,192,951	912.21	
Non-Resident Fees		340	310,151	912.21	
Local Tax Levy For Resident Enrolment Growth-Expansion To Program (6449-6031)		418	381,304	912.21	
Provincial Assistance-Based on A.D.E. of 6031 in 1967					
1. Basic Tax Relief Grant		6,031	1,206,200	200.00	21.93
2. Equalization Grant		6,031	585,062	97.00	10.63
3. Capital Grant-					
a) 1968 Debenture Payments		6,031	327,530	54.31	5.95
b) 1967 Expenditure of $265,332		6,031	69,987	11.60	1.27
4. Stimulation Grants - Direct		6,031	186,065	30.85	3.38
- Prorated	XV	6,031	118,822	19.70	2.16
5. Special Television Grant (75% of cost)		6,031	142,331	23.60	2.59
Total Provincial Assistance		6,031	2,635,997	437.06	47.91
Local Tax Levy For Existing Program and Extension to Program		6,031	2,865,499	475.15	52.09
Total Revenue, Excluding Miscellaneous		6,031	6,192,951	912.21	100.00

[a]Table IV.

grant regulations of the Department of Education allow only for grants based on the average daily enrolment of the previous year, it is necessary to raise all the cost associated with enrolment growth for the first year at the local level. (The increase in students is insufficient for the board to qualify for the 1968 Enrolment Growth Grant of $200. per student). The local tax levy required for 418 students at $912.21 per student is $381,304.

Provincial assistance in 1968 is based on the average daily enrolment of 5,031 students in 1967. On a per student basis the total provincial grants amount to $437.06.

The final item of revenue in Table XVI is the local tax levy to cover the remainder of cost not covered by provincial grant for the 6,031 students who were in the system the previous year. The advantage of stating the local tax levy in this manner is that the total cost, per student cost, and mill-rate are directly comparable with the previous year (a comparison is shown in the multi-year projection in Table XXII, page 107).

Costs and Revenues pertinent to the Business and Commerce Program, and the Science, Technology and Trades Program are shown in a similar manner in Tables XVII and XVIII on pages 86 and 87.

Program Alternatives

A program manager's primary responsibility is the allocation of resources to achieve maximum effectiveness in meeting the objectives of the school system. Priorities must be established in determining the relative importance of activities in meeting objectives. A decision must

TABLE XVII

COST OF EDUCATION AND REVENUES-BUSINESS AND COMMERCE PROGRAM

EXPENDITURES AND REVENUE	Source Table	Number of Students	Amount	Amount Per Student	Per cent
			$	$	
Expenditures					
Support Programs	XIII	3,244[a]	607,720	187.34	19.38
Shared School Services	XIII	3,244	363,364	112.01	11.59
Direct Program Cost	XIII	3,244	2,164,043	667.09	69.03
Total Program Cost		3,244	3,135,127	966.44	100.00
Revenues					
Miscellaneous		3,244	74,620	23.00	
Net Cost of Education		3,244	3,060,507	943.44	
Non-Resident Fees		260	245,294	943.44	
Local Tax-Levy For Resident Enrolment Growth-Expansion To Program (2984-2715)		269	253,785	943.44	
Provincial Assistance-Based on A.D.E. of 2715 in 1967					
1. Basic Tax Relief Grant		2,715	760,200	280.00	29.68
2. Equalization Grant		2,715	318,179	117.16	12.42
3. Capital Grant[b]					
4. Stimulation Grants-Direct		2,715	75,300	27.72	2.94
-Prorated	XV	2,715	53,377	19.70	2.09
5. Special Television Grant		2,715	64,074	23.60	2.50
Total Provincial Assistance		2,715	1,271,130	468.18	49.63
Local Tax Levy For Existing Program and Extension To Program		2,715	1,290,298	475.25	50.37
Total Revenue Excluding Miscellaneous		2,715	3,060,507	943.44	100.00

[a]Table IV.

[b]Grants on construction are paid at time of construction in cash.

TABLE XVIII

COST OF EDUCATION AND REVENUES-SCIENCE, TECHNOLOGY AND TRADES PROGRAM

EXPENDITURES AND REVENUE	Source Table	Number of Students	Amount	Amount Per Student	Per cent
			$	$	
Expenditures					
Support Programs	XIII	4,307[a]	1,138,344	264.30	21.21
Shared School Services	XIII	4,307	432,251	100.36	8.05
Direct Program Cost	XIII	4,307	3,796,987	881.59	70.74
Total Program Cost		4,307	5,367,582	1,246.25	100.00
Revenues					
Miscellaneous		4,307	99,022	22.99	
Net Cost of Education		4,307	5,268,560	1,223.26	
Non-Resident Fees		516	631,202	1,223.26	
Local Tax Levy For Resident Enrolment Growth Expansion To Program (3791-3035)		756	924,784	1,223.26	
Provincial Assistance-Based on A.D.E. of 3035 in 1967					
1. Basic Tax Relief Grant		3,035	849,800	280.00	22.89
2. Equalization Grant		3,035	355,499	117.16	9.58
3. Capital Grant[b]					
4. Stimulation Grants-Direct		3,035	84,176	27.73	2.27
-Prorated	XV	3,035	59,876	19.70	1.61
5. Special Television Grant		3,035	71,626	23.60	1.93
Total Provincial Assistance		3,035	1,420,977	468.19	38.28
Local Tax Levy For Existing Program And Extension To Program		3,035	2,291,597	755.07	61.72
Total Revenue Excluding Miscellaneous		3,035	5,268,560	1,223.26	100.00

[a]Table IV

[b]Grants on construction are paid at time of Construction in cash.

be made concerning the scale and mix of activities for various levels of program expenditure. Actual budget preparation begins at the lowest level of responsibility and becomes progressively consolidated as it pyramids upwards through higher levels of management.[9] Lower management must therefore be given a reasonably clear indication of the objectives, and the level of operations for which they will be responsible.

Within this framework schools and other responsibility centres can submit annual estimates showing the amounts to be provided for, as follows:

1. Existing Program - the level of activity which is being carried out at the present time in which no change is expected in the standards of service or size of work load.

2. Expansion of Program - the increase necessary to maintain at present standards a larger number of units of work load due to uncontrollable factors such as increased enrolment.

3. Extension of Program - the increase that results from a proposal to improve the standards of service or program, or add new services or activities.[10]

A presentation of this type will indicate the change in cost of continuing the existing program, the increase necessary due to increased workload (numbers of students), and the increase requested to extend the level or quality of operation. To each activity or major expenditure contributing to the amount requested for program extension, a priority number could be allocated which would be reviewed at a more senior level. The priorities would be useful for developing program alternatives and finally in making appropriations.

In making multi-year projections it may not be possible to develop such detailed alternatives for each activity as those developed for the annual estimates. Multi-year projections originating from res-

ponsibility centres should, however, attempt to show the alternatives available for groups of activities where this is possible. For example an estimate could be made of the total increased cost for educational supplies and salaries for a given increase in enrolment. The increase in enrolment may result in the addition of temporary or permanent classrooms which would affect capital, custodial, and maintenance costs. Similarly, an estimate of the total cost of extending a group of educational activities can easily be separated from the cost of extending custodial or maintenance activities.

Table XIX shows a comparative budget for school number 11. This school was again chosen as an example because it highlights very well the increases in cost which can take place without an increase in enrolment. In this instance costs increased for the school by 15.3 per cent for a decrease in average daily enrolment of 12 students or 2.7 per cent. The top of Table XIX shows that the teaching staff remained static at 41 teachers for a teacher - pupil ratio slightly higher than 10 to 1. The figures shown in the first and last columns are, respectively, the 1967 budget appropriation and the 1968 budget appropriation. The figures in the columns headed Existing, Expansion and Extension are estimates. It is fairly obvious that with a decrease of only 12 students compared to the previous year very little contraction of expenditure could be expected (if the existing program were to be continued). The items most likely to be affected would be supplies. No new teachers were hired in 1968 and no new rooms were opened; consequently, program extension primarily resulted from the purchase of new equipment and additional supplies. Because the school is only two years old no major

TABLE XIX

BUDGET ESTIMATES, 1968-SCHOOL NUMBER 11
SCIENCE, TECHNOLOGY AND TRADES PROGRAM

DESCRIPTION	Budget Appropriation 1967 (1)	1968 PROGRAM Existing (2)	Expansion (Contraction) (3)	Extension (4)	Total 1968 New Program (2+3+4)=(5)
Average Daily Enrolment	437	437	-12	425	425[a]
Number of Teaching Staff	41	41			41
Curriculum	$	$	$	$	$
Appliance Repairs	1,379	1,535		100	1,635
Arts and Crafts	1,000	1,308	-50	200	1,458
Audio-Visual	3,706	3,818	-150	3,500	7,168
Auto Mechanics	1,293	1,760	-20		1,740
Home Management	1,180	985			985
Child Care	750	785			785
Commencement	400	400			400
Commercial	1,398	1,650	-50	1,845	3,445
Driver Training	776	1,015			1,015
Dry Cleaning	5,109	2,085			2,085
Extra Curricular	2,750	2,750			2,750
Field Trips	250	220			220
Food Processing	8,795	10,828		3,543	14,371
General Supplies	7,649	9,000	-500	2,423	10,923
Horticulture	1,471	1,700		282	1,982
Industrial Sewing	2,505	2,200	-300		1,900
Landscaping	2,603	3,000		465	3,465
Library	5,000	4,750			4,750
Music	350	150			150
Pictures	500	500			500
Physical Education	2,258	2,322			2,322
Reading Improvement				1,736	1,736
Merchandising	2,155	2,195		-200	1,995

TABLE XIX (continued)

BUDGET ESTIMATES, 1968-SCHOOL NUMBER 11
SCIENCE, TECHNOLOGY AND TRADES PROGRAM

DESCRIPTION	Budget Appropriation 1967 (1)	1968 PROGRAM Existing (2)	Expansion (Contraction) (3)	Extension (4)	Total 1968 New Program (2+3+4)=(5)
Science-Chemistry	1,261	1,125			1,125
Scholastic Awards	500	500			500
Sheet Metal	1,600	1,840		874	2,714
Smock Rental	200	225			225
Student Services	500	500			500
Supervision	1,600	1,600			1,600
Television				3,500	3,500
Textbooks	4,439	3,100	-100		3,000
Trowel Trades	1,553	1,516			1,516
Total Curriculum	64,930	65,362	-1,170	18,268	82,460
Instruction	345,346	408,857			408,857
Business Services					
Capital Items	7,844	2,986			2,986
Custodial	37,241	52,711			52,711
Utilities	23,690	23,600			23,600
Other	39,171	26,798			26,798
Total Business Services	107,946	106,095			106,095
Total Cost	$ 518,222	580,314	-1,170	18,268	597,412

[a]From Table IV.

changes in facilities were budgeted. Most of the appropriation in 1968, therefore, is to provide the same or improved services to a slightly smaller student enrolment. To enable a comparison to be made, column 2 shows the estimated amount which would be required to provide the same service as last year (existing program) to the same number of students.

A major portion of the increased cost is due to an increase in the cost of instruction. The 1968 appropriation of $408,857. divided by 41 (teachers) gives an average salary of $9,971., an increase of $1,548. per teacher from $8,423. in the previous year. Total direct school cost per student was shown in Table XIV as $1,405.68, to which was added $264.30 allocated from support programs, for a total per student cost of $1,669.98.

Numerous items of a capital nature add to the complexity of making budget appropriations. For example audio-visual equipment and computer aids to education could form a considerable part of the amount shown under program extension. Table XIX does not separate the amounts requested for capital purposes (equipment) and for operating purposes. A more sophisticated approach to school budgets would identify capital expenditures as follows:

Replacement -	To maintain existing program;
Expansion -	To service more units such as increased enrolment or additional floor space;
Extension -	To improve the standards of service
Cost Reduction -	To reduce costs of a specific activity or several activities;

Efficiency - To modernize equipment or facilities.

In the budget-approval, or in the decision-making process, priorities could be established. Replacement would probably be given priority number 1, and expansion priority number 2, perhaps cost reduction would be priority number 3 and so on.

In order to reflect the various categories of capital expenditures, the column headings of Table XIX would be revised in accordance with Figure 2, Example II.

Table XX contains a summary of the cost of education in school number 11. The costs for curriculum, instruction and business services are shown on a student basis and also expressed as percentages.

Table XXI compares the cost of education for students in the Arts and Science Program, the Business and Commerce Program, and the Science, Technology and Trades Program for Schools number 1 to number 7. The figures shown include only school costs and do not include support program costs.

Program Goals

In each school system program goals will differ because of the local situation and will change over a time period. Program goals should be achieved over the short or long term. Ideally, goals will show what is to be done and how much is to be done. When program goals are set, a financial plan is made specifying the resources required to achieve the goals. Changes in goals can have far-reaching effects. The following tabulation illustrates the differential in teacher cost because of a change in teacher pupil ratio.

FIGURE 2

FORMATS OF BUDGET REQUESTS FOR SCHOOLS

Example I (Identical With Table XIX)

Description	Budget Appropr'n 1967	1968 PROGRAM			Budget Appropr'n 1968
		Existing	Expansion	Extension	

Example II (Showing Division Between Various Categories of Capital Expenditures and Operating Expenditures)

Description	Budget Appropr'n 1967	1968 PROGRAM								Budget Appropr'n 1968
		Existing		Expansion		Extension		Capital		
		Operating	Capital Repl'mt	Operating	Capital Exp'n	Operating	Capital Ext'n	Cost Red'n	Efficiencey (Modernize)	

TABLE XX

PER STUDENT COST-SCHOOL NUMBER 11
SCIENCE, TECHNOLOGY AND TRADES PROGRAM

DESCRIPTION	Budget Appropriation 1967 (1)	1968 PROGRAM Existing[a] (2)	1968 PROGRAM Expansion[a] (3)	1968 PROGRAM Extension[a] (4)	Total New-Program (2+3+4)=(5)
	$	$	$	$	$
Summary					
Curriculum	64,930	65,362	-1,170	18,268	82,460
Instruction	345,346	408,857			408,857
Business Services	107,946	106,095			106,095
Total	$ 518,222	580,314	-1,170	18,268	597,412
Cost Per Student					
Curriculum	148.58	149.57	-97.50	42.98	194.02
Instruction	790.27	935.60			962.02
Business Services	247.02	242.78			249.64
Total	$ 1,185.87	1,327.95	-97.50	42.98	1,405.68[b]
Cost Per Student As A Percentage	%	%	%	%	%
Curriculum	12.53	11.26	100.00	100.00	13.80
Instruction	66.64	70.45			68.44
Business Services	20.83	18.29			17.76
	100.00	100.00	100.00	100.00	100.00

[a]Amounts in Columns 2, 3, and 4 are estimated for purposes of the model Columns 1 and 5 are actual.

[b]See Table XIV for comparison with other schools.

TABLE XXI

PROGRAM COST PER STUDENT
ARTS AND SCIENCE; BUSINESS AND COMMERCE; SCIENCE, TECHNOLOGY AND TRADES PROGRAMS

DESCRIPTION	SCHOOLS 1	2	3	4	5	6	7
Arts And Science Program							
Number of Students	670	1,087	466	447		1,251	839
	$	$	$	$	$	$	$
Shared Services	101.27	14.27	108.93	89.36		87.97	113.66
Curriculum	22.90	127.23	24.15	31.54		10.97	15.11
Custodial	49.11	64.83	36.19	44.68		47.25	56.54
Instruction	510.13	524.75	572.93	555.29		452.51	531.33
School Cost Per Student	$ 683.41	731.08	742.20	720.87		598.70	716.64
Business And Commerce Program							
Number of Students	413		568	523	688	159	145
	$	$	$	$	$	$	$
Shared Services	101.27		108.93	89.36	131.69	87.97	113.66
Curriculum	19.08		28.89	41.76	130.44	16.97	6.21
Custodial	59.02		43.31	53.47	55.23	57.03	67.96
Instruction	566.73		473.12	546.68	626.02	628.29	555.35
School Cost Per Student	$ 746.10		654.25	731.27	943.38	790.26	743.18
Science, Tech. & Trades Program							
Number of Students	228		629	308	1,614		
	$	$	$	$	$	$	$
Shared Services	101.27		108.93	89.36	131.69		
Curriculum	56.38		59.34	63.97	84.05		
Custodial	98.18		72.28	89.07	91.88		
Instruction	873.61		539.97	816.08	616.76		
School Cost Per Student	$ 1,129.44		780.52	1,058.48	924.38		

Number of Pupils	Teacher Pupil Ratio	Number of Teachers	Average Teaching Salary	Total Teaching Salary Cost
10,000	18.1	555.5	$ 8,000.	$ 4,444,000.
10,000	17.1	588.2	$ 8,000.	$ 4,705,600.
	Differential cost			$ 261,600.

Because of a change in teacher-pupil ratio from 18 to 1, to 17 to 1, the additional cost to educate the same number of students is $261,600 or an increase of $26.16 per pupil, based on an average salary of $8000. In addition, more classrooms would be required, more custodial staff, etc.

Program Review, Multi-Year Plan
Science, Technology and Trades Program

Program Goals

Program goals are to continue:

1. The two-year occupations course designed to prepare students for employment in a number of different occupations (usually unskilled jobs) and give a certificate of standing upon completion of the course. At the present time, schools number 8 and number 11 are devoted solely to education of students in the two-year course. This method is expected to continue with an approximate teacher-pupil ratio of 11.1. School number 8 commenced operations in 1967 and is therefore considered up to date. No new construction is planned, therefore, with a view to introducing new occupational courses. The two schools now in operation have sufficient capacity to provide for the projected student enrolment

of 1,000 students in 1971;

2. The four-year course leading to the Secondary School Graduation Diploma. Graduates of this course expect to enter, in general, skilled employment in which specialized instruction will have direct practical value;
3. The five-year course leading to the Secondary School Honour Graduation Diploma (endorsed for admission to Grade 13). This course enables pupils of good general ability to qualify for admission to a university course, to a Teachers' College, or to other further studies for which successful completion of work in Grade 13 is required. It provides for pupils who plan upon graduation from Secondary School to enter work such as is indicated by the name of the program, an opportunity to study subjects having a special relationship to their future careers. Enrolment in the four and five-year courses is expected to increase from 3,457 students in 1968 to 4,234 students in 1971. Details of enrolment, teachers, pupil places, and custodians are shown for the program for the years 1968-1971 in Table XXII, page 107.

Program Highlight

It is difficult to establish objective criteria with which to determine the portion of the total budget which should be allocated to the Science, Technology and Trades Program. Accordingly, the following assumptions are pertinent to the 1969 - 1971 projection shown in Table XXII:

1. The minimum is based on the assumption that the present level

of operations will continue and therefore the projection must provide for salary increases, price changes, and program expansion. All items of program extension would be eliminated;

2. The maximum is based on the assumption that the program can only expand to the extent that capable teachers can be hired, classrooms provided, necessary approvals obtained, and changes effected. New activities, no matter how desirable, need trained staff, facilities and equipment. It is estimated that an additional 3 per cent of the annual projection could be effectively utilized, exclusive of capital projects.

Teachers' Salaries

Teachers' Salaries in the Science, Technology, and Trades Program are, on the average, approximately $1,000.00 above the salaries in the Arts and Science Program reflecting the additional allowance for related experience. In 1967, the median of secondary school teachers' salaries in the Province of Ontario was $9,157 for male teachers and $7,956. for female teachers. The arithmetic mean of salaries for male teachers was $9,708 and $8,566 for female teachers.[11] To attract and retain teachers, salaries should maintain their competitive position with industry.

Program Expansion

Enrolment during recent years has been increasing rapidly because a great number of shops and related facilities have been added. Enrolment in the program is expected to increase from 30 per cent of total secondary school enrolment in 1968 to 32 per cent in 1971.

The teacher - pupil ratio in 1968 is 14.9 to 1. Although many teachers would like the teacher - pupil ratio reduced even further, the 1969 - 1971 projection has been made on the basis of 15: 1.

In 1968 an additional 104 temporary pupil places were added (portable classrooms on which no provincial assistance was received) to the 219 temporary places already in existence. The additional space was primarily required because of the delay in completing school number 13 which was originally scheduled for completion in September 1968. Both school number 13 and school number 14 are scheduled for completion in September 1969 and will provide an additional 440 places in 1969 (1100 places for 4 months). In 1970, the additional 660 places provided by schools 13 and 14 will make the use of portable classrooms unnecessary. In 1971 an additional 200 pupil places are scheduled for completion as follows:

1. 40 pupil places will be provided by the construction of electronic (20 places) and engineering (20 places) laboratories at school number 5. New office space and guidance facilities will be included in the project;
2. 160 pupil places will be provided by school number 15, construction to commence in 1970.

Program Extension

1. Fluid Power

   For several years a limited amount of "fluid power" instruction has been given at school number 5. A technical laboratory is being included in school number 14 in which the scope of this subject could be increased. Fluid power is the art of generating,

controlling, and applying smooth, effective power of pumped or compressed fluids (such as air, oil, or water) when used to push, pull, rotate, regulate, or drive the mechanisms of modern life. Fluid power has now become such a fundamental part of designing and engineering that an understanding of its rudiments is necessary for anyone who wishes to consider himself industrially literate. In the last five years a new branch of this technology has emerged called "fluidices". Valves having no moving parts are one type of fluidic device. Fluidic sensors, amplifiers, and switches are functional counter parts of electronic components such as the photo cell, vacuum tube and micro-switch. Developments in fluidices have been extemely rapid and it is considered necessary that instruction in this area be introduced into the Science, Technology and Trades Program.

2. Television

The television studio (phase I) which was included in the 1968 Budget (75 per cent paid by Provincial Assistance) will be in operation in 1969. Some students look at the introduction of this studio as an opportunity for a career. Until now students interested in television have been given training in the repair and maintenance of domestic receiving sets. In 1969 and subsequent years (phase II), facilities will exist to introduce students to the production equipment required by a modern television broadcast station. Students will learn to handle, tune and repair cameras, tape machines, projectors, microphones, transmitters, and many other pieces of equipment needed in the modern

television station. Upon graduation, students will have an excellent training to obtain employment in the television industry of Ontario.

Phase III of the introduction of educational television is planned for the years 1972 and 1973 and therefore no financial estimates are included in the current program review. The introduction of phase III, which is planned to take two years, includes:

a) Expansion of Studio for furthering all aspects of television arts such as:

i) program production

ii) broadcasting and rebroadcasting

Additional staff required is expected to cost $30,000 per year.

b) Extension of receiving facilities to all schools.

Approximate cost: $170,000.

The above costs are total costs and only a portion will be chargeable to the Science, Technology and Trades Program.

Significant Factors Affecting 1969 - 1971 Estimates of Expenditures and Revenue

The significant factors affecting the 1969 - 1971 projections of expenditure and revenue shown in Table XXII are listed below.

1. Expenditures

a) Curriculum:

i) 2 per cent for extension to program each year.

ii) 4 per cent for price increases to existing program each year.

b) Custodial

Average cost per custodian of $6,859.60 increased by 8 per cent for each year 1969, 1970 and 1971.

c) Instruction

Average teacher cost of $10,083 increased by 8 per cent for each year 1969, 1970, and 1971. (Includes-a basic increase of approximately 3 per cent which is provided for in the salary schedule).

d) Shared School Services

i) 2 per cent for extension to program each year.

ii) 4 per cent for price increases to existing program each year.

e) Support Programs

The total requirement for each support program should be developed by estimating the requirements of each program for the program review period and allocating costs to elementary school and secondary school programs. In the absence of specific estimates the expenditures for 1968 were increased by the amounts indicated below:

Program	Existing Program Price Increase	Extension to Program	Total
	%	%	%
Administration	4.0	1.0	5.0
Science, Tech and Trades		No Change	
Education Centre	4.0	2.0	6.0
Secondary Schools			
Gen. Administration - Capital	*	*	*
- Operating		No Change	
Office of Director	6.0	1.0	7.0
Student Services	4.0	-	4.0
Superintendent of Curriculum	8.0	1.0	9.0

Superintendent of Instructional Personnel	6.0	2.0	8.0
Business Services	-	200.0	200.0
Business Services	6.0	1.0	7.0

* The Capital requirement for meeting debenture maturities in 1968 is increased as follows:

1969

School Number 13 for 531 Science, Technology and Trades pupil places, local cost amounts to $324,879 debentured with Ontario Educational Capital Aid Corporation.

Estimated annual cost $324,879 x 9.3% =	$ 30,213.

School Number 14 for 510 Science, Technology and Trades pupil places, local cost amounts to $364,882 debentured with Ontario Educational Capital Aid Corporation.

Estimated annual cost $364,882 x 9.3% =	$ 33,934.
Total additional debenture cost in 1969	$ 64,147.
Additional debenture cost per student in 1969	$ 13.89

1970

Total additional debenture cost in 1970	$ 64,147.
Additional debenture cost per student in 1970	$ 13.35

1971

School Number 15 for 531 Science, Technology and Trades pupil places. Design and cost similar to school number 14.

Estimated annual cost 364,882 x 9.3% =	$ 33,934.
Estimated debenture cost as above	$ 64,147.
Total additional debenture cost in 1971 =	$ 98,081.
Additional debenture cost per student in 1971	$ 18.92

2. Revenues

a) Miscellaneous: Growth of 6 per cent per year.

b) Basic Tax Relief Grant: Increase of $20.00 per year.

c) Equalization Grant: Increase of $15.00 per year.

d) Stimulation Grants:

i) Direct: The annexation grant (commenced in 1959) is due to terminate in 1969 at which time the grant is estimated to be $15.20 per student.

ii) Prorated: Maxima based on 1968 Regulations and maximum expenditures plus a $4.00 increase per year.
Estimated per student grants are: 1969 - $26.00, 1970 - $30.00, 1971 - $34.00.

iii) Special Television: Grant of $18,765 on an expenditure of $25,000 for 1969 only.

e) Local Tax Levy and Mill Rates

The local tax levy for each year of the multi-year projection has been divided in the last section of Table XXII, into the amount required for existing students and the amount required to support enrolment growth. The respective figures are brought forward from the previous section. Assessment in the municipality is expected to grow at five per cent per year increasing from 450 million dollars in 1968 to 521 million in 1971. Mill rates are established on a split mill rate system whereby the corporation mill rate is 10 per cent above the non-corporate mill rate. The respective mill rates for the Science, Technology and Trades program to be levied against corporate and non-corporate assessment, are shown for each year of the multi-year projection at the end of Table XXII.
Table XXIII shows the financial data contributing to total program cost and total program revenue presented on a per student basis.

Continuous Review

In Chapter II it was stated that one characteristic of a program planning and budgeting system is continuous review. The presentation of budget information obtained by this continuous service to the Board of Education would ideally be in two parts.

1. In June a Program Review or multi-year plan would be presented to the Board of Education emphasizing long range plans (updating the previous year's long range plans).
2. In December an estimates review would be presented emphasizing short range goals and the program budget for the following year.

Comments and directives made by the board at the Program Review stage concerning short-range plans, will provide the schools with guidance concerning the details to be included in the estimates review. In addition, reports on a monthly or periodic basis would evaluate and record the progress towards the programmed goals, expenditures, and revenues.

Sub-Programs

The programs used in this model are major divisions of the secondary school organization. In some school systems, because of local conditions, for example, local industry requirements or emphasis on specific portions of program content, Boards of Education may require that programs be divided into sub-programs. Depending on the particular requirements, sub-programs may be composed of a single subject or a group of subjects. For example English alone may be considered a sub-program or all modern languages may be grouped to form a sub-program. Presumably, even a single subject such as English could be further sub-

TABLE XXII

PROGRAM REVIEW 1968
MULTI-YEAR PLAN 1968-71
SCIENCE, TECHNOLOGY AND TRADES PROGRAM

DESCRIPTION	1967 Past Year	1968 Curr. Year	S[a] T.	1969 Next Year	1970 Next Year + 1	1971 Next Year + 2
Personnel And Performance						
Number of Non-Resident Students		516	XVIII	554	576	622
Number of Existing Resident Students		3,035	XVIII	3,791	4,065	4,229
Number of New Resident Students		756	XVIII	274	164	333
Total Number of Students		4,307	XVIII	4,619	4,805	5,184
Per cent of Total Secondary School Enrolment		30.0%	IV	31.0%	31.0%	32.0%
Number of Existing Teachers		232		288	308	320
Number of New Teachers		56		20	16	26
Total Number of Teachers		288		308	320	346
Average Cost Per Teacher		$ 10,083.00		10,889.64	11,760.08	12,700.89
Teacher: Pupil Ratio		14.9		15.0	15.0	15.0
Number of Permanent Pupil Places	Not					
-Existing	Available	3,984		3,984	4,424	5,084
-New				440	660	212
Total Permanent Pupil Places Available				4,424	5,084	5,296
Number of Temporary Pupil Places						
-Existing		219		323	323	323
-New		104				
Total Temporary Pupil Places		323		323	323	323
Custodian: Pupil Ratio		71		71	71	71
Number of Custodians		60		65	68	73
Average Cost Per Custodian		6,859.60		7,408.37	8,001.04	8,641.12

TABLE XXII (continued)

DESCRIPTION	1967 Past Year	1968 Curr. Year	S.[a] T.	1969 Next Year	1970 Next Year + 1	1971 Next Year + 2
	$	$		$	$	$
Financial Data						
Direct School Cost						
Curriculum		481,351	IX	547,212	603,411	690,042
Custodial		411,576	IX	481,544	544,070	630,802
Instruction		2,904,060	IX	3,354,009	3,763,226	4,394,508
Total Direct School Cost		3,796,987	IX	4,382,765	4,910,707	5,715,352
Shared School Services		432,251	XIII	491,369	541,812	619,644
Support Programs						
Administration		154,038	XI	173,443	189,461	214,618
Science, Technology & Trades	Not	10,240	XI	10,993	11,436	12,338
Education Centre	Available	13,862	XI	15,750	17,346	19,855
Secondary Schools						
General Administration-Capital		207,721	XI	286,932	295,892	348,106
-Operating		288,673	XI	309,565	322,031	347,432
Office of Director		2,100	XI	2,402	2,691	3,110
Student Services		82,894	XI	92,472	100,040	112,234
Superintendent of Curriculum		210,387	XI	245,962	278,882	327,940
Superintendent of Instructional Personnel		8,996	XI	10,439	11,724	13,686
Business Services		892	XI	1,940	4,036	8,709
Business Services		158,541	XI	183,744	204,500	236,079
Total Support Programs		1,138,344	XI	1,333,642	1,438,039	1,644,107
Total Program Cost		$ 5,367,582	XIII	6,207,776	6,890,558	7,979,103

TABLE XXII (continued)

DESCRIPTION	1967 Past Year	1968 Curr. Year	S.[a] T.	1969 Next Year	1970 Next Year + 1	1971 Next Year + 2
	$	$		$	$	$
Revenue						
Miscellaneous		99,022	XVIII	112,565	124,113	141,938
Non-Resident Fees		631,202	XVIII	731,053	811,129	940,340
Local Tax Levy For Enrolment Growth		924,784	XVIII	361,568	230,946	503,429
Provincial Assistance						
1. Basic Tax Relief Grant		849,800	XVIII	1,137,300	1,300,800	1,437,860
2. Equalization Grant		355,499	XVIII	501,019	598,205	685,775
3. Capital Grant						
4. Stimulation Grants-Direct		84,176	XVIII	57,623		
-Prorated		59,876	XVIII	98,566	121,950	143,786
5. Special Television		71,626	XVIII	18,765		
Total Provincial Assistance		1,420,977		1,813,273	2,020,955	2,267,421
Local Tax Levy For Existing Program And Extension To Program		2,291,597		3,189,317	3,703,415	4,125,975
Total Revenue		$ 5,367,582		6,207,776	6,890,558	7,979,103
Local Tax Levy						
For Existing Students	Not	2,291,597	XVIII	3,189,317	3,703,415	4,125,975
For Enrolment Growth	Available	924,784	XVIII	361,568	230,946	503,429
Total Tax Levy		3,216,381	XVIII	3,550,885	3,934,361	4,629,404
Local Assessment-Non-Corporation		283 mm		296 mm	312 mm	327 mm
-Corporation		167 mm		176 mm	184 mm	194 mm
Total Assessment		450 mm		472 mm	496 mm	521 mm
Local Tax Levy In Mills:		Mills		Mills	Mills	Mills
Corporation-For Existing Students		5.40		7.16	7.93	8.40
-For Enrolment Growth		2.18		.80	.50	1.02
Total Corporation Mill Rate For Science, Tech., Trades Program		7.58		7.96	8.43	9.42
Non-Corporation-For Existing Students		4.91		6.51	7.21	7.64
-For Enrolment Growth		1.98		.73	.45	.93
Total Non-Corporation Mill Rate For Science, Tech., & Trades Programs		6.89		7.24	7.66	8.57

[a]Source Table.

TABLE XXIII

PROGRAM REVIEW 1968, MULTI-YEAR PLAN 1968-71
SCIENCE, TECHNOLOGY AND TRADES PROGRAM
EXPENDITURES AND REVENUES PER STUDENT

DESCRIPTION	1967 Past Year	1968 Curr. Year	1969 Next Year	1970 Next Year + 1	1971 Next Year + 2
Total Number of Students		4307	4619	4805	5184
Percentage Increase in Students from Previous Year			7.24%	4.03%	7.88%
Expenditure Per Student		$	$	$	$
Direct School Cost					
Curriculum		111.76	118.47	125.58	133.11
Custodial		95.56	104.25	113.23	121.68
Instruction		674.27	726.13	783.19	847.71
Total Direct School Cost		881.59[a]	948.85	1,022.00	1,102.50
Shared School Services		100.36[a]	106.38	112.76	119.53
Support Programs					
Administration-		35.76	37.55	39.43	41.40
Science, Technology & Trades	Not	2.38	2.38	2.38	2.38
Education Centre		3.22	3.41	3.61	3.83
Secondary Schools	Available				
General Administration-Capital		48.23	62.12	61.58	67.15
-Operating		67.02	67.02	67.02	67.02
Office of Director		.49	.52	.56	.60
Student Services		19.25	20.02	20.82	21.65
Superintendent of Curriculum		48.85	53.25	58.04	63.26
Superintendent of Instructional Personnel		2.09	2.26	2.44	2.64
Business Services		.21	.42	.84	1.68
Business Services		36.80	39.78	42.56	45.54
Total Support Programs		264.30[a]	288.73	299.28	317.15
Total Program Cost Per Student		$ 1,246.25[a]	1,343.96	1,434.04	1,539.18

TABLE XXIII (continued)

DESCRIPTION	1967 Past Year	1968[a] Curr. Year	1969 Next Year	1970 Next Year + 1	1971 Next Year + 2
	$	$	$	$	$
Revenues Per Student					
Miscellaneous		22.99	24.37	25.83	27.38
Non Resident Fees		1,223.26	1,319.59	1,408.21	1,511.80
Local Tax Levy For Enrolment Growth		1,223.26	1,319.59	1,408.21	1,511.80
Provincial Assistance					
1. Basic Tax Relief Grant	265.00	280.00	300.00	320.00	340.00
2. Equalization Grant	107.30	117.16	132.16	147.16	162.16
3. Capital Grant					
4. Stimulation Grants-Direct	40.33	27.73	15.20		
-Prorated	15.59	19.70	26.00	30.00	34.00
5. Special Television		23.60	4.95		
Total Provincial Assistance	428.22	468.19	478.31	497.16	536.16
Local Tax For Existing Program And Extension To Program		755.07	841.28	911.05	975.64
Total Program Revenue Per Student		$ 1,246.25	1,343.96	1,434.04	1,539.18

[a]Source: Table XVIII.

divided into English Language and English Literature. Additional examples of possible sub-programs are the related subjects of electricity and electronics or all technical subjects.

The main obstacles in providing numerous sub-programs are (1) collection and manipulation of the vast amounts of data, (2) reliability of the resultant information, and (3) the cost of providing the information.

From a cost accounting point of view difficulties may be encountered in deciding whether full costs, direct costs, or marginal (differential) costs be used.

Direct costs are defined as those costs that vary with volume, i.e., only variable or direct costs such as direct material, direct labour, and variable expenses are chargeable. Costs which are a function of time such as the fixed costs of insurance, salaries for executives and managers, office salaries, and maintenance costs are excluded. Marginal or differential costs are defined as those costs resulting from alternative policies. Fundamentally, differential cost represents the variable or additional cost which will be incurred if the administration decides to take a particular alternative.[13]

If full costs are used, the problems associated with prorating indirect expenditures will be difficult to solve because of the amount of detail required. The breakdown of a program into further and finer sub-divisions always entails a cost which has to be balanced against the expected gain in effectiveness. There seems to be no reason for identifying sub-programs unless the division of a program enables the administration to:

1. Establish priorities among existing and contemplated activities;
2. Weigh prospective benefits against related costs, estimate the effects of a cutback or expansion of existing operations, or the introduction of a new activity;
3. Take into account forseeable changes in the need for services and corresponding changes in levels of operations to meet those needs;
4. Establish accountability for carrying out the sub-program and for the estimate and control of associated expenditures and revenues.[14]

The writer investigated the possibility of including in the model a specific sub-program; however, the lack of information on which the model could be based prevented its inclusion. From the analysis of operations which was made in this regard, the writer formed the opinion that until the operation of a program planning and budgeting system has reached a high degree of sophistication, decisions concerning individual subjects or groups of subjects should be made on the basis of specific cost studies or cost-benefit studies as the alternative to making budget documents more complicated and more lengthy than those required by major programs. If sub-programs are identified, the formats which have been developed in the preceding tables and Figure number 2 would seem adequate for presentation purposes.

FOOTNOTES

CHAPTER III

[1]Government of Canada, Treasury Board, Financial Management (Ottawa: October, 1966), p. 30.

[2]Ibid., p. 31.

[3]Ibid., p. 36.

[4]Ibid.

[5]Harry J. Hartley, Programme Budgeting and Cost Effectiveness in Local Schools, Paper presented to the meeting of Ad Hoc Group on Budgeting, Programme Analysis and Cost Effectiveness in Educational Planning 3rd - 5th April 1968. (Paris: Organization for Economic Co-operation and Development 1968), p. 22.

[6]Ibid., pp. 22-23.

[7]Ontario Department of Education, Report of the Minister (Toronto: December 31, 1967), p. 32.

[8]Ontario Department of Education, General Legislative Grants 1968, Elementary and Secondary Schools, Ontario Regulation 43/68 made under The Department of Education Act. Issued by authority of The Minister of Education (Toronto: Approved and Filed February 22, 1968).

[9]Government of Canada, op. cit., p. 19.

[10]Ontario Department of Education, Preparation of 1968 Estimates (Toronto).

[11]Ontario Department of Education, Report of the Minister, Op. cit., p. 41.

[12]Adolph Matz, Othel J. Curry, and George W. Frank, Cost Accounting (Second Edition; Cincinnati: South-Western Publishing Company, 1957), p. 785.

[13]Ibid.

[14]Government of Canada, op. cit., p. 18.

CHAPTER IV

SUMMARY, FINDINGS, CONCLUSIONS

Summary

The consolidation of school boards in the Province of Ontario into larger units of administration (except for a few isolated boards and the defined cities of Ottawa, Toronto, Hamilton, London and Windsor) will create an unprecedented upheaval in the administration of education in this province. The massive reorganization, together with the leadership being provided by the Federal Government of Canada and the Province of Ontario to the public sector, in implementing a program planning and budgeting system indicates an opportunity for the development of a program budget model which could be used by school boards.

Purpose

The purpose of this study was to develop a model program budget for selected secondary school programs in accordance with generally accepted criteria.

Literature reviewed.

A review of the literature revealed that a considerable amount of literature exists on program planning and budgeting systems in general, with a much smaller amount available as applied to education. From this

body of literature were identified the primary characteristics with which the model would comply.

Method of Study

The model was developed by restating on a program basis a budget made up in the traditional manner of a board of education having in excess of 14,000 secondary school pupils. Information was obtained from the following sources:

1. The approved budget document for the year 1968;
2. Interviews with senior adminstrators of the board of education staff;
3. Interviews with a member of the board of education;
4. Reports by the board of education to the Provincial Department of Education;
5. Grant calculation statements, and final approvals for construction, made by the Department of Education.

The information obtained was presented in a series of tables each of which was described to indicate the reason for its existence and the most significant items. Each of the characteristics mentioned in the section "Purpose and Characteristics" have been included in the model.

Findings

In the section entitled "Purpose of the Study" five questions were considered pertinent to the successful establishment of a program budgeting system in a board of education. The findings of the study will be related to each one in turn.

1. Can Provincial Grants be maximized by using a program budgeting

system?

Yes! It can be seen from Tables XVI to XVIII that most of the provincial assistance to education in the form of General Legislative Grants is paid on a per student basis. The emphasis of a program budget on unit costs and revenues highlights both general grant trends in the form of basic or incentive grants and specific grant revenues. Table XV indicates that stimulation grants were not maximized for library books, textbooks for grades 11 and 12, and television receiving sets. It was pointed out in the discussion of Table XV that if the expenditures on televison sets had been planned over two years, increased grants would have been due to the board. Based on the assumption that provincial aid to education does not fluctuate in an erratic manner, the projection of expenditures and average daily enrolments into the following year in a manner similar to that shown in Table XV must undoubtedly result in Grant maximization and knowledgeable decision making.

2. Is a program budget compatible with the present system of provincial aid to education?

Yes! Under the present system of grants, both General Legislative and School Construction, the amounts paid on behalf of Arts and Science students are identified specifically, or at least could be identified by further analysis. Both Business and Commerce, and Science, Technology and Trades students are considered vocational, and while in some cases provincial assistance is calculated together, figures are available by which the grants can be separated into programs. The implication is, that if operating expenditures on students can be identified and capital expendiutes on construction can be identified, then the provincial as-

sistance can be identified.

3. Is the data now assembled for budget purposes appropriate for use in a program budgeting system?

The information available in the budget under study was purely financial, and as such for the development of a program budget was incomplete. Moreover, in many cases additional information was required to separate total expenditures into specific program costs. To the extent that totals were available to which the program budget could cross balance, the answer is yes.

4. Can information for developing a program budget be obtained at a reasonable cost where this information is not now available?

Yes! As indicated in item 3 above, a considerable amount of information which is not shown in a traditional budget is required in a program budget presentation. The answer "yes" in this section is qualified by the degree of sophistication of the program budgeting system. If it were intended to establish a system which would identify grade costs at the elementary level and subject costs at the secondary school level and individual special education costs for opportunity classes and hard-of-hearing class, then, the writer's opinion would change to "no".

In some instances, however, program budget development costs may be kept within acceptable limits by providing detailed program information on a cyclical basis. While it may be too costly in terms of personnel and equipment to detail the cost of each sub-program every year a periodic review of selected or all sub-programs would serve the purposes of management. Similarly, a planned addition to a program could be budgeted without examining all sub-programs in detail.

It was mentioned in Chapter III that allocation of actual teacher time and estimated teacher salary costs to programs would mean the analysis of approximately 35,000 teacher periods per cycle. Within the programs defined in the model some students may move across program lines, for example, an Arts and Science student may take a period or two per cycle of automotive shop. To identify these students and the particular options they take would be a big task. For the purpose of this model it was assumed that inter-program studies would offset one another and that the prime motive for having, for example, a technical option, is for the Science, Technology and Trades student, and that the addition of an Arts and Science student would not necessarily increase costs.

The answer "yes" is given above, provided that the program budget does not require information extensively beyond that which was obtained by the writer. Some information such as program floor areas was not available to the writer but would not be costly to obtain.

5. Would a system of program budgeting require decentralization of the budget process?

Yes! The budget document studied included individual secondary school budgets made up in the traditional manner. If budgets from schools were required on the basis shown in either of the examples of Figure 2, then with the responsibility for program fulfillment which is delegated to schools, the necessary authorities must be decentralized and delegated as well. Based on a continuous review of budget performance, schools must have the responsibility and authority to make adjustments as necessary to fulfill goals and objectives.

Conclusions

The study has made it clear that budget documents would be considerably lengthened in presenting a program budget. Even so, what appears to be a minimum of analysis has been presented. Tables XVI, XVII, and XVIII (cost of education and revenues for each program) could be expanded to show the expenditures for each activity. Several years experience would show which tables could be expanded (or contracted) to provide more meaningful information.

The multi-year plan Table XXII, shows that substantial increases in cost will result if current trends continue. Per student costs are projected to increase by 23.5 per cent during the period 1968 to 1971 while total cost including growth in enrolment is estimated to increase by 48.6 per cent during the same period. Very modest increases were estimated for provincial assistance in the model with most of the increase in cost, therefore, coming directly from local taxes.

On September 18, 1968, Premier John Robarts announced publicly that the Ontario Government planned to cut spending "to avoid a 'financial nightmare' and any significant reductions must affect education, health and welfare".[1]

He said that forecasts show provincial revenues will grow only 40 per cent by 1973 while a projection of spending patterns shows spending will increase by 74 per cent in the same period. Because the projected provincial deficit cannot be financed through borrowing and tax increases, the only solution is by cutting expenditures. He continued by saying that the expenditure increase did not include any new programs

and consequently, "any reductions of significant size must come in the areas of education, welfare, and highways because this is where the great bulk of our provincial revenues are spent."[2]

In the face of rising costs and the rather gloomy forecast of Provincial aid to education by the Premier, it would appear that boards of education will need to scrutinize carefully program expenditures to establish a priority ranking as a basis to allocate available funds to the most essential areas.

It is concluded that if present indications are correct and expenditures continue to outstrip revenues, a program, planning, and budgeting system would be useful as a decision making tool to boards of education in Ontario to

1. Assist the administration in determining priorities;
2. Assist the administration in utilizing its resources in the most effective manner.

Undoubtedly, the establishment of priorities will be difficult due to the distorting and obscuring effect of intervening variables; however, it seems clear that the basis of evaluation and decision making should be something more than a line-item budget and subjective judgment.

The introduction of a program budgeting system would be advantageous in that school boards and administrators would be compelled to perform important functions which it has too frequently been the tendency to neglect, for example, the formal identification of objectives and goals and the long-term financial and physical implications of meeting those goals in terms of people and buildings.

FOOTNOTES

CHAPTER IV

[1]"Financial Nightmare for Ontario if Spending Isn't Cut, says Robarts". The London Free Press, September 18, 1968, p. 1.

[2]Ibid.

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