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Madan Handa and Michael Skolnik*

WHAT GOOD IS BENEFIT-COST ANALYSIS IN EDUCATION?

Introduction

This paper questions the efficacy of using rate-of-return or benefit-cost analysis as a tool of public decision-making in the allocation of educational funds. (We use the terms "rate-of-return" and "benefit-cost" interchangeably here because the two concepts are interrelated and can be calculated from the same data.) The first section consists of discussion of the concepts and their use and the second is an example – an empirical exercise comparing the *actual* allocation of educational funds among the school, university, and technical college sectors of education in Ontario during the period 1961-66, with the *optimal* allocation indicated by consideration of prevailing rates of return to investment in those sectors during one period. It is evident from this example that the allocation was not made according to rate-of-return criterion. It is then suggested that economic studies, insofar as they have for the past decade concentrated on the importance of rate-of-return analysis, have not contributed much to guide public policy decision-making. Not only have the actual decisions been made ignoring this economic criterion; but, it is argued, the criterion by itself is inadequate and misleading as a basis for public policy. Educational policy makers, not having actually used the criterion but having paid a certain amount of public deference to it, now express disillusion with the tool. In the authors' view undue importance was accorded to benefit-cost analysis. It was held as an item of emotional rhetoric, neither fully understood nor actually used but precipitating the formation of "camps of followers" for and against its adoption. It is time that the full implications for educational planning of recent critiques of rate of return analysis are appreciated. The paper ends with the suggestion that it is time the energy of researchers was directed to other allocation models.

How can benefit-cost analysis be used in making allocation decisions in education? In principle, the answer given by Welfare Economics is that public money should be allocated among different programs in such a way as to make the marginal social rates of return equal for all programs. In this way the social return to a given outlay of money will be maximized. However, even an economist would be reluctant to advise educational authorities to make their allocation decisions strictly according to such a limited criterion. There are three main limitations of benefit-cost analysis (and hence objections to such a course of action): First, this criterion concerns only one of many possible social goals – allocative efficiency. It does not allow for distributional considerations, which may be important especially if most of the beneficiaries of one program come from a lower income group than the beneficiaries of another. Maximizing efficiency first, and then trying to achieve other social goals, e.g., improving distributional equity, may not be a desirable way of dealing with a multi-objective social welfare function (in other words not with a public service such as education which has many goals).[1] Secondly, the conventional approach

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to estimating costs and benefits in education leaves serious conceptual problems – problems so great that it is difficult to have much confidence in measures of the rates of return. The most serious problems lie in the relationship between earnings and marginal productivity, the consumption benefits of education, externalities, nonmonetary returns to investment in education, the effects on earning capacity of factors other than education, and the separation of research from teaching costs when dealing with the higher education sector. Thirdly, previous estimates of the rates of return to investment in education belie a variety of technical inaccuracies owing to poor data and over-simplified models. The boundary line between conceptual problems and technical problems is by no means precise, but the distinction may be useful at least for indicating the degree of the problem. Under the latter heading comes the frequent use in empirical work of average costs rather than marginal costs, of average returns rather than marginal returns, of cross-section data to make time series projections, and the difficulties of allowing for the effects of productivity increase. Most benefit-cost studies commence with lamenting the poor quality of data, especially on earnings. In principle the problems we have called technical might be overcome with vastly improved data and more complex models. In our view, this cannot be said of the problems labelled as conceptual. The external benefits of education on which many decisions hinge, can hardly be described let alone measured, and there is no reason to believe that economists are getting closer to having reliable measures of this concept.

Suppose one were able to estimate the allocation of public subsidies which would maximize the social returns to a given outlay. Considering the limitations listed above, it is doubtful that an economist would advise an educational authoritiy to distribute its money in precisely such a way. However, most economists probably would claim that such estimates ought to be taken into consideration in making the budget allocations. How can they be taken into consideration? One way would be to take as a starting point the estimates of the optimal allocation, and adjust the figures to take account of other factors, e.g., importance attached to social goals other than allocative efficiency, judgments about externalities, monopoly returns, etc. Another way would be to determine the allocation by other criteria, (goals generated by other than economic considerations) and then to see how far the tentatively chosen allocation pattern diverges from the estimate of what is optimal. If the divergence is substantial, the educational authority might be persuaded to consider altering the pattern, to bring it closer to the optimal pattern.

However, it is not certain that bringing the allocation pattern closer to the optimal distribution will increase the total social returns to a given outlay. That would depend upon the shape of the benefit functions. Thus, even if economists could supply educational policy-makers with estimates of the precise allocation of a given outlay which would maximize social returns, it is not clear how such estimates could, or should, be used. It should be noted that this point is an academic one. Although in the second half of the 60s the use of such estimates was advocated and described, to our knowledge no such estimates were ever produced. Without them, it is difficult to see how one could even begin to consider actually using benefit-cost analysis as a guide for making allocation decisions. Such estimates would at least provide the basis for dialogue.

One of the main reasons why estimates of the optimal allocation of public spending on education have not been made is the difficulty of estimating benefit functions, i.e., how the benefits (or the rates of return) will vary as expenditure varies. By making some simplifying assumptions, we have estimated such functions for Ontario for the period 1961-65, and have derived estimates of the allocation of public money for education

which would have maximized the economic returns to Ontario society for those years. These estimates of the optimal allocation patterns are then compared to the actual patterns which were adopted during those years. The calculations are based on a number of simplifying assumptions. Because of these assumptions the estimates themselves are open to question, but they are merely an example, presented in order to provide a concrete basis for discussing the potential contribution of benefit-cost analysis to allocation decisions in education. The estimates should be read in the context of the following question: Suppose the educational authorities in Ontario had been given these estimates when they were making allocation decisions in these years. How might they have used the estimates in making their decisions?

Allocating Resources to Obtain Maximum Economic Returns: An Example

How should resources be allocated among the different sectors of an educational system in order to obtain the maximum economic returns from the expenditure of public money? The sectors considered in this exercise are the elementary and secondary schools, the universities, and the technical colleges and institutes. In what follows, *it is assumed that these three sectors can be viewed as independent projects from a public investment perspective,* i.e., the costs incurred in providing given services in one sector, and the benefits that accrue from investment in one sector, are independent of expenditures made in other sectors. Though expedient, such an assumption is not entirely valid. Its main weakness has to do with the transition between secondary schools and the post-secondary system. Insofar as completion of university ordinarily requires completion of secondary school, part of the returns from higher education are really attributable to the education received at the lower levels. Expenditures at the elementary and secondary school level influence the numbers of students available for post-secondary education, as well as the learning capacity of post-secondary students. Another problem arises from the fact that the earnings from employment of persons with one type of education are affected by variation in the numbers of persons in the labour force with other types of education. Insofar as all sectors compete together for resources, the level of operation of one sector affects the costs of others. The larger the changes in allocation patterns being contemplated and the longer the time period in question, the more serious such problems will be. It is not easy to assess quantitatively the distortion introduced by this assumption. However, the exercise is primarily for illustrative purposes. And the assumption of independent net benefit functions may be no worse than some of the other assumptions in the standard kit-bag of benefit-cost analysis (e.g., that which equates social marginal product with earnings).

The model

We introduce the following notation:

Let E_{it} denote the expenditure on sector i in year t, and $E_t = \sum_i E_{it}$, the total expenditure in year t. We designate R_{it} as the total net returns accruing to society from an investment in the i^{th} sector made in year t, and let $R_t = \sum_i R_{it}$ denote the total net returns from all sectors. The expression for the rate of returns to a given expenditure in sector i, r_{it} is equal to R_{it}/E_{it}, and $r_t = R_t/E_t$ denotes the total net returns-expenditure ratio.

The objective is to maximize the social rate of return. Thus we have for an objective function:

$$\text{Max}\,(r_t) = \frac{R_{1t} + R_{2t} + R_{3t}}{E_t}$$

$$= \frac{r_{1t}E_{1t} + r_{2t}E_{2t} + r_{3t}E_{3t}}{E_t}$$

since $\quad r_{it} = \dfrac{R_{it}}{E_{it}} \qquad$ where i = 1, 2, 3 $\qquad$ (1)

The return-expenditure functions, describing how the rate of return for a sector varies with the level of expenditure in that sector, are assumed to be linear and may be expressed as:

$$r_{1t} = a_1 - b_1E_{1t} \tag{2}$$

$$r_{2t} = a_2 - b_2E_{2t} \tag{3}$$

$$r_{3t} = a_3 - b_3E_{3t} \tag{4}$$

where a_i and b_i are constants:

Finally, there is a budget equation, denoting the fixed budget as E_t°:

$$E_{1t} + E_{2t} + E_{3t} = E_t^\circ \tag{5}$$

The problem is to maximize the objective function (1) subject to conditions (2), (3), (4), and (5). This is accomplished by determining appropriate values E_{1t}, E_{2t}, E_{3t}. The distribution of E_t° for which equation (1) is maximized, subject to the above conditions, is the optimal sectoral distribution of expenditures.

Solution

To solve the problem we use the Lagrangian multiplier technique. Form a new function "F" as follows, where 'λ' is a Lagrangian multiplier;

$$F = (a_1 - b_1E_{1t})E_{1t} + (a_2 - b_2E_{2t})E_{2t} + (a_3 - b_3E_{3t})E_{3t}$$
$$- \lambda(E_{1t} + E_{2t} + E_{3t} - E_t^\circ) \tag{6}$$

Take first derivates and put these equal to zero.

$$\frac{\partial F}{\partial E_{1t}} = a_1 - 2b_1E_{1t} - \lambda = 0 \tag{7}$$

$$\frac{\partial F}{\partial E_{2t}} = a_2 - 2b_2E_{2t} - \lambda = 0 \tag{8}$$

$$\frac{\partial F}{\partial E_{3t}} = a_3 - 2b_3E_{3t} - \lambda = 0 \tag{9}$$

$$\frac{\partial F}{\partial \lambda} = E_{1t} + E_{2t} + E_{3t} - E_t^\circ = 0 \tag{10}$$

From (7) to (9) above we have:

$$a_1 - 2b_1E_{1t} = a_2 - 2b_2E_{2t} = a_3 - 2b_3E_{et} \quad (11)$$

Since $a_1 - 2b_1E_{1t} = a_3 - 2b_3E_{3t}$, we have:

$$E_{1t} = c_1 + c_2E_{3t} \quad (12)$$

where $c_1 = \frac{a_1 - a_3}{2b_1}$

$$c_2 = \frac{b_3}{b_1}$$

Substituting the value for E_{3t} from (10) we have:

$$E_{1t} = c_{1t} + c_2 (E_t^\circ - E_{1t} - E_{2t})$$

or $$= c_1 + c_2E_t^\circ - c_2E_{1t} - c_2E_{2t}$$

or $$E_{1t} = \acute{c}_1 - \acute{c}_2E_{wt} \quad (13)$$

where $\acute{c}_1 = \frac{c_{1t} \quad c_2E_t^\circ}{1 + c_2}$

$$\acute{c}_2 = \frac{c_2}{1 + c_2}$$

Similarly we can solve for E_{2t}, the form of which will be:

$$E_{2t} = \acute{d}_1 - \acute{d}_2E_{1t} \quad (14)$$

where $\acute{d}_1$ and $\acute{d}_2$ are defined analogously to $\acute{c}_1$ and $\acute{c}_2$.
From (13) and (14) the optimal values of E_{1t}^{oo} are:

$$E_{1t}^{oo} = \frac{c_1 - \acute{d}_1\acute{d}_2}{1 + \acute{d}_2} \quad (15)$$

Substituting (15) into (14) we have:

$$E_{2t}^{oo} = \acute{d}_1 - \acute{d}_2 (E_{1t}^{oo}) \quad (16)$$

E_{3t}^{oo} can be solved from the constraint:

$$E_{3t}^{oo} = E_t^\circ - E_{1t}^{oo} - E_{2t}^{oo} \quad (17)$$

If the allocation to the three sectors during the ensuing year is made equal to the values E_{1t}^{oo}, E_{2t}^{oo}, and E_{3t}^{oo}, then returns to society on the total expenditure E_t° will be maximized and the marginal returns in each sector will be equal. We shall now estimate the allocation of the total Ontario expenditure on education during the years 1961-65 which would have

resulted in the maximum economic returns to society. The data and estimates for E'_{it}s are taken from M.L. Handa's *Toward a Rational Educational Policy.*[2]

The Estimates

In order to estimate the optimal allocation of expenditures, we need equations describing the relationship between the rates of return and the level of expenditure. Annual observations on the rates of return are available for each of the three sectors for two years. These figures, taken from studies by Stager;[3] Skolnik and Bryce;[4] and Lacombe[5] are presented in Table 1.

TABLE 1 SOCIAL RATES OF RETURN TO INVESTMENT IN EDUCATION, CANADA 1961, 1967

Year	University	Elem. & Sec. Schools	Technical Institutes
1961	12.0%	13.0%	7.6%
1967	11.0%	9.0%	4.4%

Sources: The Source for the university and school estimates is Lacombe. This source was used to enhance comparability between sectors and between years, although there are other excellent sources available, e.g., Stager for universities. The earnings data for 1961 are from the decennial census, and for 1967 from the Statistics Canada Survey of Consumer Finance. The earnings differentials were adjusted for economic growth, and it was assumed that 60 percent of adjusted earnings differentials could be attributed to additional education.

The estimates for technical institutes for 1961 are taken from Stager. The earnings figures are from the 1961 census, and it is assumed that 67% of the earnings differentials can be attributed to additional education. The Skolnik and Bryce estimates were derived from earnings data obtained in the authors' survey of the members of The Ontario Association of Certified Engineering Technicians and Technologists. It was assumed that 60% of earnings differentials could be attributed to further education.

An effort has been made to insure that estimates for different years, for different sectors, from different sources are roughly commensurate with one another in terms of underlying assumptions and methods of calculation. The studies differed slightly with respect to population covered (inclusion of females, farm families, self-employed, etc.) and to adjustments of earnings data (e.g., for mortality, participation, economic growth, and the proportion of earnings differentials attributed to education). We have analyzed the differences and conclude that, for the figures in Table 1, many of the effects that would impart upward or downward bias cancel out, making the figures roughly commensurate. The main difficulty lies in the Technical Colleges sector. In 1961 (i.e., before the

creation of the system of Colleges of Applied Arts and Technology) it was an extremely heterogeneous collection of institutions with widely differing rates of return. The rate-of-return for 1961 in Table 1 is the one estimated by Stager for Technical Institutes, i.e., largely three year programs. The figure for 1967 is the rate-of-return for a three-year diploma of technology in a Technical Institute or a Community College.

There are two observations on expenditures and on the rates of return for each sector. It is possible to fit a line between each pair of points. Assuming that the appropriate rate-of-return functions are linear, as in equations (2), (3), and (4) in the model above, and that they did not shift over the period in question, we have the following equations:

$$r_{1t} = 12.39 - 0.0036\, E_{1t}$$

$$r_{2t} = 16.88 - 0.007092\, E_{2t}$$

$$r_{3t} = 7.88 - 0.069565\, E_{3t}$$

We can now substitute the values of the parameters in the above equations, along with the values of total expenditure on education, into equations (15), (16), and (17) and determine the optimal allocation to each sector. However, before presenting the results, one qualification should be noted. The total expenditure figure considered here represents the total of expenditure made by the various institutions. These funds came from a variety of sources in addition to the provincial government. For the elementary and secondary schools a substantial proportion came from local sources (i.e. the local property tax), and for universities from student fees and from the Government of Canada. The fact that much of the revenue for educational institutions comes from sources other than the provincial government raises a dilemma for this exercise of determining the optimal allocation. The provincial government *is* the decision-making body which, in principle, has authority to distribute *its* grants to various sectors in such a way as to maximize the economic returns to the society of the province. Yet, the sectors get funds from other sources, and the rates-of-return to expenditures by these sectors depend upon the total expenditures made by the sectors, not just that component of expenditure derived from the provincial government. It makes no sense to express the rate-of-return functions equations (2), (3), (4) above with provincial expenditures as the independent variables. Expressing these functions with total expenditures made by the institution as the independent variable implies that it is the total expenditure, not just the provincial expenditure that is being manipulated in order to maximize returns. This raises some problems, because total expenditure on education is not manipulable by any single decision-making body. However, the provincial government exerts strong influence over the total expenditure of school boards (for example it imposes per capita expenditure ceilings); and it has the preponderant voice in determining the amount expended by universities and technical institutes. Thus, it is not unreasonable to view the provincial government as determining the total amount of money to be spent by the three sectors combined, and prepared to take whatever action is necessary to make the allocation of these expenditures among sectors conform to its policy targets. It must be remembered that in this exercise we are concerned *only* with the allocation of a given total expenditure among sectors, and not with the determination of the total expenditure to be made on education. Such action by the provincial government would not only include varying its own levels of contribution to the various sectors, it would also seek to affect the flow of funds from other sources. (There has been little

development of theory that aims to explain the interaction of the various educational authorities in determining the revenue and expenditure of each agent. A more complete optimization model would have to take account of these interactions.)

The estimates of the optimal allocation for the years 1961-66 are shown in Table 2 and of the relative distributions in Table 3. The actual expenditures by sector for these years are in brackets. The estimates of optimal expenditures for the university sector are substantially above the actual level of expenditure for all years. For the elementary and secondary school sector, the case is just the opposite – the actual far exceeded the optimal for all years. In comparing the results for these two sectors, however, one must remember the qualifications which were made above about ignoring linkages between the sectors. The estimates of the rate-of-return for the school sector do not include the 'option value' of being eligible to go on to post-secondary education. The technical institute sector spent much less than the optimal amounts during 1961-66. However, by the last year of the period, the ratio of actual to optimal had reached $\frac{37.4}{44.1}$, compared to only $\frac{4.3}{22.0}$ at the beginning. The differences between the actual and optimal patterns of allocation, expressed in percentage terms, are shown in Table 3.

Conclusion

This exercise indicates that the actual allocation of expenditure on education in Ontario during 1961-66 was quite different from that which likely would have resulted if the provincial government had been trying, in its allocation decisions, to maximize the total economic returns of its educational investment to the society of the province. The example makes a number of strong assumptions, and proper qualification should be attached to the results shown here. Subject to the validity of these assumptions, however, we may conclude that allocation decisions were not guided primarily by the objective of maximizing economic returns. Or, if this was the main objective sought, the attempt was largely a failure. It is evident that decision-makers must have been pursuing a variety of other objectives when they made their decisions on educational expenditure.

Now to return to our basic question: suppose the assumptions, the model, the data, and the methodology of this exercise satisfied us – what, then, would be the value of the figures in Table 2? Should the provincial government, on the advice of its Minister of Education, aim to achieve the expenditure pattern suggested, or go, say, half-way from the actual pattern of the previous year to what is suggested as optimal for the coming year If no such operational guideline for the use of figures such as these can be given, what then is the value of the figures? If such figures are of no value, what value can be claimed for the raw rate-of-return estimates from which such allocation patterns are derived?

In our view, each of the steps involved in calculating rate-of-return to expenditure for the different educational sectors involves conceptual and technical problems sufficiently serious to undermine confidence in the estimates derived. In addition, economists who have advocated the use of rate-of-return analysis in making educational policy decisions, give almost no advice as to how this should be done. The results of Lacombe's rate-of-return analysis were presented in the Economic Council of Canada's *Eighth Annual Review.*[6] This *Review* is devoted to decision-making in the public sector, particularly to expenditure decisions, and it uses human resource policies as a case study. Yet, after presentation of the rate-of-return to investment in education, the most it suggests is that, "these calcula-

TABLE 2 ESTIMATES OF OPTIMAL ALLOCATION OF EXPENDITURE ON EDUCATION ONTARIO, 1961-1966

Year	Optimal Expenditure ($000)			
	Universities (E^{∞}_{1t})	Schools (E^{∞}_{2t})	Technical Colleges (E^{∞}_{3t})	Total E°_{t}
1961	423,730 (109,254)	214,907 (547,001)	21,974 (4,356)	660,611 (660,611)
1962	463,430 (122,079)	235,058 (595,438)	24,029 (5,000)	722,517 (722,517)
1963	520,280 (162,962)	263,914 (642,267)	26,971 (5,936)	811,165 (811,165)
1964	617,433 (219,618)	313,228 (735,714)	31,998 (7,327)	962,659 (962,659)
1965	710,232 (280,085)	360,332 (814,693)	36,801 (12,587)	1,107,365 (1,107,365)
1966	852,121 (359,362)	432,354 (931,832)	44,143 (37,424)	1,328,618 (1,328,618)

Note: The figures in parentheses are actual expenditures. For an explanation of how the estimates of optimal expenditure were calculated, see text.

TABLE 3 ESTIMATES OF OPTIMAL PERCENTAGE DISTRIBUTION OF EXPENDITURE ON EDUCATION ONTARIO, 1961-1966

Year	Optimal Distribution			
	Universities	Elementary and Secondary Schools	Technical Colleges	Total
1961	64.14 (16.54)	32.53 (82.80)	3.33 (0.66)	100
1962	64.14 (16.90)	32.53 (82.41)	3.33 (0.69)	100
1963	64.14 (20.09)	32.54 (79.18)	3.32 (0.73)	100
1964	64.14 (22.81)	32.54 (76.43)	3.32 (0.76)	100
1965	64.14 (25.29)	32.54 (73.57)	3.32 (1.14)	100
1966	64.14 (27.05)	32.54 (70.14)	3.32 (2.82)	100

Note: The actual distributions are in the parentheses. Distributions were derived from Table 2.

tions of the returns from education serve as *useful* (our italics) indicators of the relative value of investments in the various educational systems across the country".[6] This reflects the state of the art. As economists whose work has been involved with educational planning, we would say that the rate-of-return may be a useful tool for purposes of *ex-post* measurement but it has very limited usefulness as a tool for making decisions about the amount of public money which should be spent on different kinds of educational service. Educational policy generally has to deal with simultaneously inter-acting phenomena. It would probably be more fruitful if economists, who are advisors to educational authorities, explore the application of the current tools of quantitative model building rather than spend their energy on estimating and re-estimating rate-of-returns.

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Lawrence Bezeau*

THE TREATMENT OF CAPITAL COSTS IN EDUCATIONAL PROJECTS

In our opinion, many of the recent applications of cost-benefit and cost-effectiveness analysis to projects in education have treated capital costs in wrong or inappropriate ways. The usual treatment, which ignores the social discount rate as well as alternative interest rates, implicitly assumes that capital is a free good. This paper looks at the consequences of such an assumption and suggests more appropriate alternatives.

Capital facilities may be defined as those which are used over more than one time period (usually more than one year) and therefore their cost cannot be charged entirely against the period in which it is incurred. Fixed recurrent costs may be treated in the same way to obtain a single per pupil charge for use of capital facilities. This paper asserts that capital is not a free good and, contrary to such writers as Speagle, that the truth of this assertion is not controversial.[1] The existence of a social discount rate does not depend on the existence of money markets. Nevertheless, the existence of money markets and interest bearing securities makes it clear that any capital investment incurs an opportunity cost which needs to be accounted for in analyzing investment alternatives. In many project analyses, the cost of capital either is ignored entirely or treated incorrectly (as in the UNESCO IIEP publication *New Educational Media in Action*, Volume 1).[2] In the latter case the researchers depreciated a television facility by 10% per year, but charged interest on the initial value in every year. This overcharge was offset by an unreasonably low discount rate of less than 3%. The net effect of the two mistakes is not clear.

The failure to account for capital costs in analyzing projects results in a bias toward projects which are excessively capital intensive. The assumption of a zero interest rate on capital, combined with a non-zero wage paid to labour, results in labour appearing unduly expensive. Project comparisons are biased toward capital intensive projects such as televised and computer-assisted instruction and away from labour intensive projects such as classroom instruction and teacher education. This bias is particularly serious in developing countries which typically have capital shortages and labour surpluses. In such an environment the opportunity cost of capital is very high. To ignore it results in the paradox of capital intensive educational projects in the presence of unemployment, frequently educated unemployment. A number of developing countries (El Salvador and the Ivory Coast, for example) have launched the type of large scale national projects for televised instruction that have been shunned by the developed countries, in spite of their higher labour costs.

The following analysis is based on per-pupil-time as the basic unit of educational cost. The year is the most common time unit used, but when educational technology is one of the alternatives the costs often are expressed as money units per pupil hour of instruction.

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This figure includes recurrent costs per pupil and ought to include a charge for utilization of capital facilities. The calculation of such a charge is the main topic of this paper.

A fundamental assumption of this analysis is that an amount of money in one time period is equivalent to some different amount in another period, and that the equivalence is described by a rate of change r, often called an interest rate or discount rate. The formula used to calculate equivalent amounts (2) is derived from a simple difference equation (1) and a boundary condition that one of the amounts (A_o) is known.

$$A_{t+1} = A_t + rA_t \quad (1)$$

$$A_n = A_o(1 + r)^n \quad (2)$$

t = the time period, an integer
A_t = the amount of money at time t
A_o = the amount of money at time O
r = the discount or interest rate
n = the other time period of interest (an integer; positive, negative or zero)

The difference equation is that which describes geometric growth and the solution is the familiar formula for compound interest.

The selection of r, the discount rate, has been the subject of controversy in the literature of economics of education.[3] Detailed discussion of this issue would take us too far afield, and is unnecessary here. For purposes of choosing the correct proportions of capital and labour in education projects, the opportunity cost concept of Baumol appears appropriate. This is consistent with treating the interest rate as the cost of capital in the same way that the wage rate is the cost of labour.

The selection of the length of time for discounting purposes is somewhat more arbitrary, but to discuss it in detail would also not be appropriate here. A non-zero time period length is assumed which results in discrete formulations with difference equations, as opposed to continuous formulations with differential equations in the case of a time period length of zero. The discrete approach has been used because the resulting equations are more amenable to numerical solution. Nevertheless, if the exact forms of cost and enrollment functions are known, and the resulting differential equation can be solved, the continuous formulation may be simpler. The most accurate period length is probably one month but the data are often not detailed enough to justify a length of less than a year. A period length of one year is the most common choice, and the numerical results of such a choice are usually not significantly different from the results obtained by using any shorter length.

The constant utilization case

In their study Jamison and Klees used the concept of "annualization" of a capital investment to evaluate projects involving educational technology.[4] This technique, borrowed from business applications, effectively accounts for both depreciation of capital stock and the social discount rate, provided that utilization of the facility is constant over time. It operates in much the same way as a mortgage, without the legal implications. The underlying assumption is that the value of the facility decreases to zero (or to some positive salvage

value) over its useful lifetime. The cost of the facility, which includes both depreciation and interest levied at the rate of social discount, is paid off in equal annual installments during its lifetime. If the number of pupil-hours (or pupil-years) of use is the same for every period,then each pupil can be assigned an equal portion of the periodic charge.

This technique is familiar to those who have paid off a loan in equal periodic installments. Each installment payment pays both interest and a portion of principal. The usual assumption is that the payment is first applied to the outstanding interest, and the remainder is applied to the principal. As the outstanding principal decreases the amount of interest also decreases, and a greater proportion of each payment is applied to reduce the outstanding principal, with the final payment being exactly equal to the outstanding interest plus the remaining principal. The assumption that interest is paid before principal is not necessary. As long as the interest is paid on the outstanding amount, it doesn't matter whether it is principal or accumulated interest; payments will be the same in either case. If the loan of this example were used to finance a school, the payments made during the lifetime of the school could be charged to the pupils, as a shadow price used for social accounting.

A closely related approach involves the use of a sinking fund where the payments, instead of being used to reduce the amount of the debt, are invested in a sinking fund which is used to pay off the entire debt when it matures. If it matures at the end of the school's useful life, and if the sinking fund collects interest at the same rate as the debt, then the mortgage and sinking fund techniques are exactly equivalent. Equal payments are required at exactly the same times to fill the sinking fund or repay the debt.

Goldberg describes the periodic repayment of a fixed debt by the following finite difference equation (3) and its solution (6), with the two boundary conditions (4) and (5).[5]

$$A_{t+1} = A_t + rA_t - z \tag{3}$$

$$\text{at } t = 0, A_t = A_o \tag{4}$$

$$A_n = 0 \tag{5}$$

$$z = \frac{A_o\, r(1+r)^n}{(1+r)^n - 1} \tag{6}$$

- t = a variable number of time periods
- A_t = the amount of the debt outstanding at time t
- A_o = the amount of the debt at time zero (i.e., the value of the loan at the time the facility is first utilized).
- n = the time at the end of the useful lifetime of the facility, a particular value of t
- r = an interest rate, specifically the social discount rate
- z = the periodic installment payment necessary to repay the debt over n periods, assumed to be constant.

The difference equation (3) simply states that the amount of debt outstanding at time t + 1 is equal to the amount at time t plus the interest minus the installment payment.

The initial amount of the debt A_o is known and the amount after the last installment is paid is zero. These two boundary conditions (4) and (5) eliminate the constant of summation and permit the equation to be solved for z.

The situation becomes more complex if the investment in the facility is made in more than one period of time. This could be regarded as a series of loans with each one treated separately, but this is not the simplest way to approach the problem. Instead of considering this separately, it is treated as a part of the following general formulation which permits arbitrary investments and levels of use.

The variable utilization case

Let us now consider the most general case of capital costs and pupil utilization of a facility. This is when capital costs occur not only at the beginning of the project but also at arbitrary intervals throughout its lifetime. The number of pupil-hours, or pupil-years, of use also varies. Nevertheless the cost of capital is to be attributed to each pupil in proportion to his use of the facility. The personal loan analogue of this would be one which is received by the borrower in arbitrary amounts at arbitrary times and which is paid off in irregular installments. The constant utilization situation is a special case of this general formulation.

The basic difference equation (7) expresses the fact that the amount of money at time t + 1 is equal to the amount in time t, plus the interest, plus additional capital costs, minus the payment on the debt.

$$A_{t+1} = A_t\, rA_t + C_t - PE_t \tag{7}$$

$$\text{when } t = 0,\ A_t = 0 \text{ or } A_o = 0 \tag{8}$$

$$\text{when } t = n,\ A_t = 0 \text{ or } A_n = 0 \tag{9}$$

A_t = amount of debt outstanding at time t
r = social discount rate
C_t = capital costs incurred at time t
p = per pupil period (i.e. per pupil-year or per pupil-hour) debt payment, assumed to be constant
E_t = utilization at time t (i.e. enrollment or number of pupil-hours)
PE_t = total payment on the debt at time t
n = value of t at the end of the lifetime of the facility.

The boundary conditions (8) and (9) require that the amount of the debt be equal to zero before any costs are incurred and after it is all paid off.

The difference equation (7) can be put in standard form (10) and solved:[6]

$$A_{t+1} = (1+r)\,A_t + (C_{t+1} - PE_{t+1}) \tag{10}$$

The final term in the solution (11)

$$A_t = (r+1)^{t+1} \sum_{i=0}^{t-1} \frac{C_i - PE_i}{(1+r)^i} + A_o(1+r)^t \tag{11}$$

can be eliminated with the initial boundary condition (8) to yield (12).

$$A_t = (1+r)^{t-1} \sum_{i=0}^{t-1} \frac{C_i - PE_i}{(1+r)^i} \tag{12}$$

Substitution of the final boundary condition (9), rearrangement of terms to solve for P, and alteration of the limits of summation yield (13).

$$P = \frac{\sum_{i=1}^{n} C_i(1+r)^{-i}}{\sum_{i=1}^{n} E_i(1+r)^{-i}} \tag{13}$$

Notice that the amount of the debt, A, no longer appears in the equation. It has been implicitly replaced by the C_i's which are the known costs.

The subscripts of the summation (i) are time subscripts, starting from the first expenditure on the facility and continuing until the end of the facility's useful life. The important point is to include in the summation all values of i for which $C_i \neq 0$ or $E_i \neq 0$. Clearly if these values are zero the corresponding terms will not affect the totals. This assertion is formalized in the following derivation which shows that the summation may be made over a time interval with an entirely arbitrary zero point and the results will be the same.

The zero point can be changed by summing over m with $m = i + k$ where k is an arbitrary integer constant. The new equation is as follows:

$$P = \frac{\sum_{m=1+k}^{n+k} C_{m-k}(1+r)^{k-m}}{\sum_{m=1+k}^{n+k} E_{m-k}(1+r)^{k-m}} \tag{14}$$

The constant factor $(1+r)^k$ can be removed from both the numerator and denominator to give

$$p = \frac{\sum_{m=1+k}^{n+k} C_{m-k}(1+r)^{-m}}{\sum_{m=1+k}^{n+k} E_{m-k}(1+r)^{-m}} \tag{15}$$

The summation now takes place between (1 + k) and (n + k) to yield the same result even though the constant has been removed from the exponent. Since no assumption was made about the magnitude or sign of k, the domain of the subscripts may include both positive and negative integers as well as zero. Thus equation (13) is the solution to the general problem.

The tiresome summation of the numerator and denominator in equation (13) can be

avoided when costs or enrollments assume constant values. If costs or enrollments are constant during a series of consecutive periods with limits a and b, equation (16) can be used to evaluate the sum without explicitly performing it.

$$\sum_{i=a}^{b} (1+r)^{-i} = \frac{(1+r)^{1-a} - (1+r)^{-b}}{r} \qquad (16)$$

Equation (16) is simply an application of the equation for the sum of a geometric progression with $(1+r)^{-1}$ as the constant ratio of each term with the previous term.[7]

An example of the general formulation

The following example, illustrated in Table 1, could be for a school building expected to enroll pupils for 50 years. The building contains some equipment, perhaps shop equipment, which must be replaced every 10 years.

TABLE 1 Exemplary Data on Capital Expenditures and Pupil Utilization For an Educational Facility

Year	Capital Expenditure in thousands of dollars	Facility Utilization in thousands of pupils
1	800	
2	600	
3	50	0.8
4		0.9
5		1.2
6		1.5
⋮		⋮
13	50	⋮
⋮		⋮
23	50	⋮
⋮		⋮
33	50	⋮
⋮		⋮
43	50	⋮
⋮		⋮
52		1.5

Social Discount rate = 14 percent per year

The summation in the numerator need only involve 7 terms since all the others are zero. The result is as follows:

$$800(1.14)^{-1} + 600(1.14)^{-2} + 50(1.14)^{-3} + 50(1.14)^{-13} + 50(1.14)^{-23} + 50(1.14)^{-33} + 50(1.14)^{-43} \quad (17)$$

This summation yields a value of 1209.58 for the numerator.

The summation in the denominator involves 50 terms but only the first 3 need be evaluated explicitly. The sum of the terms for years 6 to 52 can be evaluated using equation (16). The first three terms (years 3 to 5 inclusive) are as follows:

$$0.8(1.14)^{-3} + 0.9(1.14)^{-4} + 1.2(1.14)^{-5} \quad (18)$$

This totals 1.69609. Substitution into equation (16) for years 6 to 52 yields

$$1.5\left(\frac{1.14^{-5} + 1.14^{-52}}{.14}\right) = 5.55289 \quad (19)$$

The value of the denominator is, therefore, 1.69609 + 5.55289 = 7.24898.

The capital charge which must be added to annual per pupil recurrent costs is 166.86 dollars.

Conclusion

The preceding analysis has shown the theoretical basis and calculation of a constant per-pupil time period charge for use and depreciation of capital facilities. The formula for compound interest (2) can be used to transfer an amount of money to an equivalent amount at a different point in time. Equation (13) is the general equation for the constant per-pupil charge for any pattern of capital investment and pupil utilization. Equation (16) provides a computationally easier means of evaluating terms of equation (13) for consecutive periods of time during which the capital invested (C_i) or the utilization (E_i) are constant.

The cost comparison of alternative instructional techniques is a common task required of the educational planner. Failure to account for the cost and depreciation of capital leads to suboptimal investments in education, specifically to excessively capital intensive instructional technologies. This type of error which is particularly serious when planning for developing countries can be easily avoided, as we have shown in this paper.

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A MULTI-VARIABLE APPROACH TO THE ALLOCATION OF FISCAL RESOURCES

Both accountability and increasing emphasis on equity in the allocation of resources to various educational programs have prompted state departments of education to concern themselves with developing new approaches to making decisions about fiscal resources. Recently the Tennessee Tax Modernization and Reform Commission[1] proposed an alternative to the present minimum foundation in Tennessee; one which included step-wise implementation and systematic change. The proposed new procedure described here "implies a systematic plan that is worked out in advance to provide direction in the allocation of scarce resources".[2]

The model suggested would be the vehicle for analysis, development, implementation, and revision of any allocation procedure designated as a scheme for the distribution of scarce fiscal resources to support educational programs. Not only will the need for accountability and the rational use of resources be made evident, but also the employment of the computer for analysis and processing makes for timeliness and specificity. Timeliness is important in planning and decision-making; specificity is essential if the proposed model is to become operational under the set of criteria to be outlined below. The degree of desirable specificity relates to available input data and the output required by users. The eventual demands placed upon decision-makers should dictate the nature of the data base constructed. However, the primary factor to be kept in mind is the purpose of the model – to make possible allocations of scarce resources which are seen to be objective and "fair" according to the needs of different clients and in the real world of a variety of political forces.

The model which is proposed represents a series of mathematical operations which represent a comprehensive explanation of the allocation concept underlying the system. The model could be made to perform through manual calculations but this would be time consuming and laborious. The speed with which computers handle the series of simple but repetitive mathematical operations makes it possible to provide advisory data to decision-makers in a practical format and very quick time. The computerization phase also forces the analyst into a step-wise consideration of the problem under scrutiny, as various components of the model are prepared for computerization.

Overview of the model

The components of the model may be expressed as follows:

$$W = f \left\{ [(X_i, Y_j)(Z_k)(S_u)] (R_m) \right\}$$

Where, W = aggregate cost per set of decision variables.

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f = a functional relationship between the independent variables (X_i, Y_j, Z_k, R_m, S_u) and the dependent variable W.

X_i = the student population flows per grade level (K-12), where special education (K-12) and vocational technical education (7-12) are subsets of X_i. The symbol "i" defines the number of school districts within a system.

Y_j = cost differentials.

Z_k = the base cost factor.

R_m = rate of inflation for goods and services.

S_u = the regional cost of delivering educational programs. (Regional implies a locus of operation, whether it is local, state, or multi-state.)

The allocation objective can be reached by using actual full-time-equivalent (FTE)[3] enrollment figures per program category, as reported from each individual school district (X_i). However, that would entail a monumental data gathering and maintenance operation which is not considered feasible at present. It would also be possible to use periodically updated educational program category prevalence rates, which can be applied to gross district FTE enrollments reported, yielding (X_i). The second approach makes each (X_i) a function of gross by-grade-level FTE enrollments of a school district—reported perhaps as average daily membership (ADM), to be multiplied by an appropriate prevalence rate (P_r). In such event the student numbers would be expressed as $X_i = (ADM)_i(P_r)$. If "equal opportunity" were defined nationally in terms of dollars, then (Y_j) could be represented by national educational program category cost differentials. If, for example, we assumed that the base cost coefficient occurred at grade levels three through six, and grade level seven requires a factor of 1.2 times the base cost for delivery of service to the client (as was reported in the National Educational Finance Project),[4] then (Y_j) becomes the previously defined coefficient of the base cost factor (Z_k). Therefore, in the allocation simulation a grade seven regular program client would be funded at 1.2 times (Z_k). For a program the appropriate cost-of-delivery index (S_u) to the locus of the service—national, regional, state or local—would be used. Similarly a locus-specific—national, regional or state—inflation factor would be applied. (R_m). A national allocation model could be constructed as the sum of a series of smaller unit calculations, i.e., regional or state. Similarly the model might be applied using the locus of a single local school district. But neither of these at present, seems feasible; this model as illustrated is intended for operation at the state level.

Before we continue let us consider briefly our twin goals of timeliness and specificity in the system by which allocation-related data are to be brought to the attention of decision-makers. Timeliness is associated with the nature of the demand for data. If the demand is immediate and the information delivery system has not yet been highly developed, obviously, the timeliness criterion cannot be met. Timeliness therefore to some extent is a function of the stage of development of the information delivery system. It might also be considered a function of the availability of program analysts, the accessibility and capacity of computer facilities, the software packages, priority constraints placed upon use of the computer facilities, and the volume of information analysis requested. All these factors will affect the timely delivery of information to decision-makers. Therefore, when judging a model, decision-makers must be aware not only of its capacity but of the condi-

tions under which it will be forced to operate. Unreal expectations will lead only to disappointment. So, good communication between the most elementary level decision-maker and the system analyst is essential.

By specificity we refer to two factors: (1) the most elemental use to which the information output is ever likely to be put, and (2) the capacity of the user system to develop suitable data bases. The scope of the allocation model described here is defined primarily by the situation of the user. For example, if there were no middleman agencies, so that all educational funds were disbursed to each school district by a single federal agency and all funds derived from the federal source, this model would still be suitable for preparing data to guide the allocation of available funds to programs and operating units.

Operationalizing the model

At present, the most appropriate implementation for the model would be on a statewide basis, i.e., mandated by a state legislature with guidelines developed through the state department of education, in cooperation with the legislature and local school districts. The computerized model which has been created is based on the following assumptions about data and policy conditions:[5]

- Educational program category prevalence rates (P_r) are amenable to a process of differentiating FTE Exceptional Children Program Category Enrollments, (X_i).
- State level FTE Vocational Education Program Enrollments have been determined.[6]
- Estimates of program category cost differentials are available (Y_j).[7]
- A base cost figure has been established by the legislature taking into account revenues actually available (Z_k).[8]
- An inflation factor has been established by the state planning commission for use with projected enrollment forecasts.[9]
- Average daily membership for each school district is obtainable either directly or indirectly.[10]

Through use of this process more specific development and expansion of the allocation concept which lies behind this model can be obtained. For example, Tennessee has identified a number of specific categories of handicapped children. In 1972 it was decided to conduct a census of exceptional students in order to define the nature and degree of their exceptionality. When these data are available they will be plugged into the model instead of the estimates currently used. It is expected that the model will be used for a variety of "evidence" required to help decision-makers. For example: 1. District level administrators, program supervisors, teachers, state legislative representatives, and their constitutencies will want specific accounting for program category enrollees in order to establish priorities and plan for future development. 2. The same group will need to know how effectively each program cost differential (Y_j) weights the client enrollment in a program. 3. It will also require knowledge of the resulting (dollar) program cost. 4. Where more than one system must be supported by a district, comparative fiscal requirement figures (by system and district) will be needed as well as data on available local and state funds. 5. The state will wish to have data reflecting "weighted pupils" to be supported $(X_i)(Y_j)$ – so that within the restriction imposed by scarce fiscal resources, an equitable base cost figure (Z_k) can be established.

When estimated prevalence rates are utilized, it is assumed that each grade level (K-12) will be supporting categorical clients in approximate consonance with the factor magnitude represented by the appropriate prevalence rate: e.g., a 2% prevalence rate for "gifted" students across grades K-12,[11] or a 1.22% prevalence rate for "distributive education" students across grades 7-12.[12] It is also assumed tht exceptionality categories apply at all grade levels (K-12); that vocational categories apply to grade levels 7-12; and that funds are allocated equitably, relative to available resources, and on programmatic basis with regard to the needs of specific clients, not groups of clients.

Illustration of the model

The model can be used to demonstrate to local educators and laymen how much money their school district would receive, under a given set of constraints and weights. In addition, it would be a useful simulation vehicle for teaching educational finance. In this illustration the model, for Anderson County, will: (1) Differentiate those FTE clients enrolled in the regular program category at grade 2 (to determine X_i for grade 2). (2) Show the effect of applying the appropriate cost differential (Y_j). (3) Establish the cost of program support at the existing level of enrollment.

These are the data needed for the illustration:

1. ADM per grade level, K-12

   Grade 2 $(ADM)_2$ = 652 students.

2. Exceptional children category prevalence rates.

   The rates (%) are taken from Rossmiller.[13] (P_r) =

Gifted	2.00
Educable Mentally Retarded	1.30
Trainable Mentally Retarded	0.24
Auditorially Handicapped	0.10
Visually Handicapped	0.05
Speech Handicapped	3.60
Physically Handicapped	0.21
Neurological and Special Learning Disorders	1.12
Emotionally Disturbed	2.00
Multiple Handicapped	0.07

3. Vocational enrollment prevalence rates and category cost differentials for grade levels 7-12. (Since the illustration involves only grade level two, these are not shown.)
4. Regular program by-grade-level cost indices for K-12.

   The Grade 2 cost index used is taken from the National Educational Finance Project.[14]

   (Y_j) = 1.20
5. An appropriate base cost figure established by the state legislature.

   Statewide base program cost (Z_k) = $421.36

The following algorithm was used:

$$X_i = \left[(ADM)_2 - \sum_{r=1}^{N} (ADM)_2 (P_r) \right]$$

where there are ten exceptionality categories and therefore N = 10.

Once the necessary data have been identified and prepared, a series of calculations similar to the following are performed by the computer for each grade level.

Step 1. This step differentiates FTE clients enrolled in the regular program category at grade 2. As shown in the figure below, the ADM for grade 2 is successively multiplied by each of the ten exceptionality category prevalence rates (P_r) which are expressed as percentages. When the pupil units[15] for each category of exceptionality have been established, they are totalled and subtracted from the regular program pupil-units for grade 2 in order to identify more specifically those clients considered to have needs which can be best served through regular program enrollment.[16] As more complete data bases are compiled following the development of rigorous census efforts and enrollment reporting systems, the enrollment data used in the step would eventually be actual by-program-category FTE enrollments instead of estimates resulting from the application of prevalence rates.

Step 2. (X_i) for grade 2 can then be multiplied by the appropriate cost index (Y_j). This step weights the pupil-units relative to the differences in program cost.

Step 3. When the weighted pupil-units have been calculated, then the program cost can be determined.[17] The weighted pupil-units figure is multiplied by the established base program cost. (Z_k). Base cost figures will primarily reflect available fiscal resources, and so offer promise for refinement only through assessment of the determination processes or reconsideration of the tax bases from which they emanate.

ILLUSTRATION FIGURE USING DATA OF ANDERSON COUNTY

Step 1.
Enrollment in Grade 2: 652

ENR		Prevalence Rate		Estimated Enrollment	Exceptionality Categories
652	X	0.0200	=	13.0400	Gifted
652	X	0.0130	=	8.4760	Educable Mentally Retarded
652	X	0.0024	=	1.5648	Trainable Mentally Retarded
652	X	0.0010	=	0.6520	Auditorially Handicapped
652	X	0.0005	=	0.3260	Visually Handicapped
652	X	0.0360	=	23.4720	Speech Handicapped
652	X	0.0021	=	1.3692	Physically Handicapped
652	X	0.0112	=	7.3024	Neurological and Special Learning Disorders
652	X	0.0200	=	13.0400	Emotionally Disturbed
652	X	0.0007	=	0.4564	Multiple Handicapped
				69.6988	TOTAL

Adjustment of grade 2 student population for those students detemined to have unique needs:

652 - 69.6988 = 582.3012 (pupil-units)

Step 2.
Weighting of grade 2 pupil-units through application of the appropriate cost factor:

582.3012 X 1.20 = 698.76144 (weighted pupil-units)

Step 3.
Costing of the grade level two (2) regular program through application of the legislatively prescribed base cost figure:

698.76144 X $421.36 = $294,430.12 (program cost)

The concerns of the stated problem have been dealt with. As each category of pupil-units is differentiated, weighted, and costed, it becomes possible to establish the level of overall program support required within the system under scrutiny. Table 1 shows the results for each program category to be supported by the Anderson County school system. The first column identifies the program area; the second displays the results of the $[(X_i)(Y_j)]$ pupil-unit weighting calculations; the third establishes the program cost in dollars (derived by multiplying these with the base cost figure). A computer printout similar to Table 1 would normally represent the by-program-category data used by district level planners in making resource allocation decisions.

TABLE 1 PROGRAM AREA COST PROJECTIONS FOR STATEWIDE SCHOOL SYSTEMS 1973-74 SCHOOL TERM

ANDERSON COUNTY

Program Areas	Weighted Pupils	Program Cost (Dollars)
Kindergarten	168.35	$ 70,935.68
Grade Level 1	600.16	252,884.77
Grade Level 2	698.76	294,430.12
Grade Level 3	530.50	223,532.07
Grade Level 4	562.65	237,079.47
Grade Level 5	528.72	222,779.44
Grade Level 6	543.90	229,176.82
Grade Level 7	564.55	237,878.62
Grade Level 8	589.27	248,296.66
Grade Level 9	650.26	273,994.50
Grade Level 10	591.33	249,164.83
Grade Level 11	572.10	241,061.91
Grade Level 12	483.64	203,788.47
Exceptional Children Program Areas		
Gifted	175.20	73,820.25
Educable Mentally Retarded	186.80	78,709.22
Trainable Mentally Retarded	38.73	16,318.16
Auditorily Handicapped	22.98	9,680.81
Visually Handicapped	11.41	4,808.03
Speech Handicapped	326.42	137,538.78
Physically Handicapped	58.74	24,749.21
Neurological and Special Learning Disorders	185.89	78,327.17
Emotionally Disturbed	434.91	183,255.53
Multiple Handicapped	14.68	6,187.30
Vocational-Technical Program Areas		
Agriculture	338.27	142,532.72
Distributive Education	71.41	30,087.88
Health Occupations	14.36	6,050.46
Consumer Homemaking	520.31	219,237.10
Occupational Homemaking	16.29	6,865.96
Business Education	83.53	35,194.60
Technology	5.12	2,157.12
Trades and Industrial	345.91	145,753.61
District Totals	9935.16	$4,186,277.28

A printout similar to Table 2 completes the picture by providing major program area totals. In the example provided, the information is represented as weighted pupil-units. Summarized costing information relative to each area of concern outlined above is also given.

TABLE 2 STATEWIDE EDUCATIONAL PROGRAM AREAS SUMMARY TABLE

Total weighted pupils, Grades K-12, adjusted for Exceptional and Vocational Program Enrollments:	7084.21
Total weighted pupils in Exceptional Children Programs:	1455.75
Total weighted pupils in Vocational-Technical Programs:	1395.20
Total weighted pupils (Regular + Exceptional + Vocational):	9935.16
Total program cost, Grades K-12, adjusted for Exceptional and Vocational Programs:	$ 2,985,003.35
Total Exceptional Children Program Cost:	$ 613,394.47
Total Vocational Program Cost:	$ 587,879.46
Total Program Cost (Regular + Exceptional + Vocational):	$ 4,186,277.28

Summary

We have briefly outlined a new model which would assist in making resource allocation decisions. Its primary object is to relate the needs of certain educational clients to the dollars necessary to support their programs. Through use of a program costing process, a step is taken to assist decision-makers recommend an equitable distribution of available resources.

The illustration provides a sample of the type of information which the model would make quickly available. Given the present under-development of state and local school management information systems, it is suggested that a simple model such as this could be implemented – one which would satisfy an urgent need for a fiscal resource allocation scheme, one which is inexpensive to implement and which would lend itself to further elaboration as funds and development resources become available.

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1. This paper is based on research conducted during 1972-73 under Public Chapter 746, The State of Tennessee, which "created a Tax Modernization and Reform Commission for Tennessee... to study alternative methods of financing public school systems; the fiscal relationship between the state and local governments; methods by which the state and local tax structure could be made responsive to economic growth; and methods by which the state and local tax burden could be distributed more equitably".
2. C. Kenneth Tanner, Dewey H. Stollar and William E. Tomlinson, "A Multivariable Planning Model for State and Local Educational Systems". Paper presented at the Fifth Annual Symposium on Educational Systems and Planning, Harvard University, Cambridge, Massachusetts, July 15-16, 1973.
3. The authors' concern is the portion of the student's time spent in a particular program. For example, if a student requires five six-hour school days to complete a total base time block, and that student devotes two hours on three of the five days to a vocational education class, then the full-time-equivalent enrollment unit would be reported as 6/30ths of a FTE student in that vocational education program.
4. The National Educational Finance Project, University of Florida, Gainesville, Florida.
5. Tanner, Stollar, Tomlinson, *op. cit.*, pp. 17-39.
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7. The estimates used were derived from the following sources: Richard A. Rossmiller, "Resource Configuration and Costs in Educational Programs for Exceptional Children", *Planning to Finance Education*, Roe L. Johns, Kern Alexander, K. Forbis Jordan, eds. National Educational Finance Project, 1971, p. 67; estimates of Professor C. Kenneth Tanner, The University of Tennessee, Knoxville, Tennessee; data from The National Educational Finance Project, University of Florida, Gainesville, Florida.
8. For the period in which the model illustration was developed, the base per pupil expenditure of $421.36 was proposed. This figure does not include transportation or capital outlay.
9. No inflation factor is used in the illustration given in this paper since it does not involve forecasting future student population.
10. When enrollment data are reported in average daily attendance (ADA) by grade level and in aggregate ADM by school system, a simple percentage conversion can be accomplished as in this illustration.
11. Rossmiller, *op. cit.*, p. 61.
12. Estimate made by Gary Q. Green, Research Associate, Research Coordinating Unit, The University of Tennessee, Knoxville, Tennessee.
13. Rossmiller, *op. cit.*, p. 61.
14. National Educational Finance Project, University of Florida, *op. cit.*
15. The term pupil-unit is used because figures resulting from application of prevalence rates to ADM enrollments appear to represent fractions of pupils, while actually representing fractions of pupils' time. It is proposed that pupil enrollment data should reflect the portion of time which the student spends associated with any specific program category since this approach more accurately reflects educational service.
16. The authors are aware of the current propensity to have exceptional children participate (to whatever level possible) in regular program activities. The concepts presented are related only to attempts to develop resource allocation alternatives which will associate the program delivered to the client and the cost of that program. It is not a priority setting scheme, although it is considered amenable to decision-making activities involving the establishment of priorities. Program structure is left, at present, to the restrictions imposed by available resources, the political process, and the needs assessment.
17. Note that neither inflation (R_m) nor regional cost-of-delivery indices (S_u) are considered in this illustration.

Edward J. Blakely*

DECISIONS AMONG CITIZENS: MODELS, PROCESSES AND ROLES OF EDUCATIONAL PLANNERS

In my opinion, educational planners have arrived at a point their colleagues in other planning sectors reached several years ago. They now realize that, to be successful, planning must involve citizen participation at every level. The recent ISEP conference in Toronto (June 1974) was a bold recognition within our professional community that unless there is active support, confidence, and involvement of the intended beneficiaries of planning, planning efforts are unlikely to be successful. At Toronto, the focus was on the politics of planning. But, in reality, politics is only shorthand for the multi-dimensional problem of integrating planning for education into the macro community decision-making process.

At one of the Buffalo workshops prior to the conference proper, Bernard Kaplan offered a stimulating workshop on citizen involvement in the planning process, providing insights into the planner's role as institutional and organizational consultant. Unfortunately, the discussion of role and planning processes did not provide a conceptual framework which would enable the planner to link the various components of his work into a network of planner-citizen-plan transactions. This paper will attempt to provide a model comprehensive, easily understood and useful to planners working in the field.

Much, perhaps too much, has already been written on citizen participation. Since de Tocqueville, the wheel of citizen involvement has been reinvented at least once in every decade by some zealous American anxious to show that democracy can and should prevail in every institutional context from politics to family life. The parade of notions, theories and theologies on citizen involvement would fill a very large tome. But basic is the belief that (in de Tocqueville's words) "As no one is different from his fellows, none can exercise a tyrannical power; men will be perfectly free because they are entirely equal, and they are perfectly equal because they are entirely free." The basis for the right to participation, then, is the equality of citizens. And the notion of participation is adopted and adapted to altering socio/economic circumstances. This same statement is true, at least in the twentieth century, for much of the world. As the world becomes increasingly complex, the means to involve citizens in matters that affect their lives become more difficult. Nonetheless, people find some means of organizing or structuring responses to change and the process of change.

In the past half century popular control or participation has spread from the village or town meeting places to the formation of labour organizations, the development of civic associations, the creation of a cadre of applied social and behavioural scientists to act as citizen advocates, and the design of a plethora of institutional frameworks to insure individual or collective involvement in almost all socio/political affairs. In essence, as James Cunningham defined it, "Citizen participation ... [is] a process wherein the common amateurs of a community exercise power over decisions related to the general welfare of the community.[1]

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Clearly, the propagation of the idea that nearly every unknowledgeable individual (amateur) can exercise his or her will unilaterally (power) and provide, alter the course of or force, conclusions (decisions) is of utmost importance to the educational planner. In few other planning arenas does the ordinary citizen feel as competent to exercise judgment as in education. Recognizing that such amateurs (to a very large extent) will be involved in educational decisions will force the planner to become skilled and sensitive in his interaction with the community. Because, whether he likes it or not, these are change agents through whom the planner must affect community residents.

Participation structures

In a political democracy citizen involvement in decision-making takes diverse forms. Most participation is institutionalized in such legislative bodies as legislatures or parliaments, school boards, planning commissions, city councils, or village councils. Since these are recognized institutional forums for public expression of the popular will, the bodies develop mechanisms to incorporate community concerns. Ward and Johnson writing on citizen information systems characterize the institutionalization of citizen involvement into four basic strategies: co-optation, consultation, education-therapy, and community power.[2] Although the strategies may be mixed with various other approaches (depending upon the social context), they operate fairly universally. Each merits a brief definition and discussion in relationship to educational planning and planners:

Co-optation is a means of involving non-elected citizens through some representative formula, i.e., advisory board, task force, panel. This method elevates and separates some community residents from others by labeling them as official or semi-official spokesmen for the group. Use of this device would insure that the planner has some legitimacy in his efforts to broaden reference groups (low income, racially disadvantaged, etc.). However, the planner using such "representatives" should be aware that he thereby gains a continuing knowledgeable community "constituency" but at the expense, possibly, of institutionalizing or rigidly structuring the planning inputs. There is also the danger of the representatives being publicly repudiated by the people they are alleged to represent.

The *education-therapy* approach attempts to involve citizens in decision-making by increasing their information base. Frequently this model takes the form of some community education project to involve citizens, along with the professional planners, in diagnostic data collection and analysis. The educational planner who intends to use this strategy must learn how to help citizens clarify, and come to terms with, their resistance to change by participating in the change process itself.

This method provides the planner with a means of altering the psychological barriers to planning as the planning process evolves. However, in order to use it the planner must master the type of skills commonly employed in non-formal adult education and in community development work.

Consultation is the process of providing professional information to a client or group through an on-going set of transactions, and receiving in return their reactions to the data and their opinions of the problem. In these interactions the professional attempts to comprehend and analyze the client's dilemma from the client point of view, in order to help him (the client) make intelligent decisions. Generally educational planners have viewed themselves as consultants to schools, institutions, boards of education or ministries.

Translating this client/consultant relationship into the role of the professional *vis à vis* the man-in-the-community is difficult. Moreover, if they recognize the need for such consultation most educational planners assign this role to some other school administrators.

The *community power* strategy is aimed at the redistribution of power within the socio/political system, i.e., to transfer power to some members (usually the middle and professional ones) of racial, ethnic or other groups which do not normally have equal opportunity to influence educational decisions. When educational planners become involved in these issues they play the role of *advocates* for change. Many find it difficult to play such a role without getting politically involved.

These four strategies to planned change provide a range of approaches to citizen participation in educational planning efforts. The role of the planner varies with each, yet in all cases his work is more than a technical exercise in providing expertise. We shall link these involvement strategies with different models of social change.

Models of Change

The five models briefly examined here are based on the work of Sashkin *et. al.* who summarized current strategies of institutional, organizational, and community change.[3] They exhibit more similarities than differences. However, for the purpose of this paper, we will focus on their differences and the different roles they impose upon the educational planner.

Research, development and diffusion

This is a model (based on the work of early social change practitioners and theorists) which stresses the transmission of innovation through research. Its basic requirement is to have new data capable of being communicated to potential users via normal media channels –data which will be so persuasive that they will cause users to voluntarily relinquish old procedures, beliefs or behaviour.

In many respects, the work of educational planners may be accurately defined in terms of this model. An assessment (research) is translated into a remedy (plan) and disseminated to the school system and/or the community. At times newspapers and other media are used to disseminate the requirements and steps of the plan to the public.

The method has several serious handicaps. First, it assumes the credibility of the expert's opinion with his audience. Second, it assumes that the receiver of the information is capable of, and willing to, study the evidence and vicariously reach the same conclusion without having first gone through the same process.

There are, indeed, audiences for which such a model is appropriate but the general citizenry is not one of them. For example, through periodical reports and plans senior school officials and professional planners in other agencies might be so informed. A good educational planning department should have a publication to keep its select interested public aware of its mission, accomplishments and innovations, and provide this constituent group with the opportunity to feed back to the planning experts reactions to their techniques and to the politically and socially sensitive aspects of their recommendations.

Social interaction and diffusion

This is a model (based on behaviourial intervention theory and the research findings of

Lewis, Lazarsfeld and others regarding the dynamics of group and community communications' systems) which relies heavily on identifying influential community "opinion leaders" or "gatekeepers" so that the interchange of opinion and knowledge flows freely. Knowledge from these group leaders then "trickles down" to others in their groups, persuading them that the desired change is reasonable and possible.

Educational planners commonly use this model. It works well when they report to school board members, and it works well if the board members are really representative of the power forces and interests of the community and exert sustaining influence on their constituents. Planners tend to assume that all such persons in authority (particularly the elected ones) represent the views and interests of their constituencies. This is as fallacious as the assumption that those speaking in the name of citizens or ratepayers groups better "represent" them. A planner using this model effectively must not only diagnose the school system's planning needs, but also must expand his diagnosis to the community social structure. He should utilize the data both in expanding the planning information base and in identifying the appropriate communication channels for the introduction of the plan.

Intervention theory and method

This model, which was developed by Chris Argyris and his colleagues in 1970, concentrates on internal organizational development. It assumes that change can be introduced into an institution or organization by gathering "process" information on the working of the client's system and subsequently providing clients with these data for decision-making.

Educational planners already use this model, to some extent, and it can be successful (a) when there is only one client (school system) not two (school and community) whose members fundamentally disagree; and (b) when the will to implement is strong. It presumes that the key to success is primarily to alter the information flow and data use—particularly in having changed procedures. The analysis of *how* decisions are reached is the goal, rather than providing technical or quantitative answers to specific planning problems.

Planned change

On the face of it this seems to be the model, used generally in promoting organization change, which most closely resembles much of the national educational planning proposals of the 1960s. The model expands the work of Lewin. As defined by Lippett and others it is a seven step procedure for intervention in the system: need analysis; the establishment of a social contract between the client and the interventionist; system diagnosis and data collection; the development of a plan of action; implementation of the plan; evaluation and stabilization of the change; withdrawal of the change agent.

The difficulty in enthusiastically endorsing this model is that it is almost too simple. The *personal* intervention of the planner working with the client's agents seems essential for success. This would make it an appropriate technique for micro planning at the level of the school program or the school, but unsuitable at the level of the state or the nation.

Action research

This is another model derived from the work of Lewin. It provides for directly linking the research, decision-making and changed activity, involving a continuous cycle. It is almost a Delphi process to achieve concensus and change. In my opinion this method provides

the educational planner with a powerful tool. It establishes him as a resource both for the school and the community system, and offers him the widest possible frame of reference. He can combine it with any feature of the models listed. However, it has some dangers. The planner must not lose sight of the fact that he is the only player in the game who has had technical planning training. It is not just any change which is the goal (or any change which the participants will translate into action), but the appropriate change and the specific set of actions which will make that change occur (at the desired pace, in more or less the desired manner, without undue side effects which could prove to be worse than the current problem situation). Again this model seems more suitable for the local system/community interface than for planning at the state or national level. And frequently the activities carried on under the label of action research are the very antithesis of planning and could not be described as research.

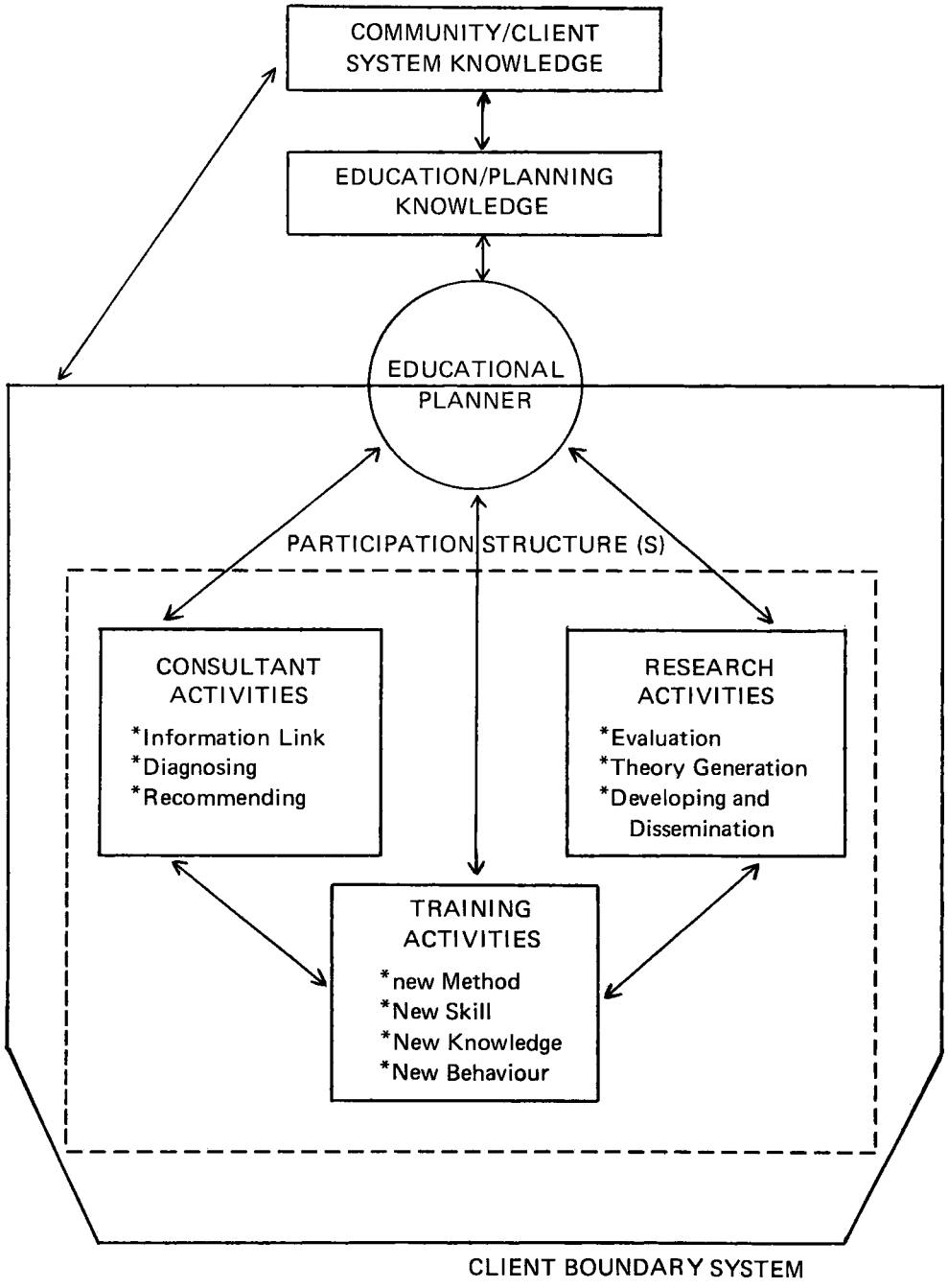
Obviously these five approaches are not separate and distinct. To some extent their titles merely reflect slightly different ways of conducting the same work. The titles are useful to reinforce the message which seems to be becoming insistent – that the planner must view planning as a process, as well as a set of tasks for technical data assembly. In order to develop plans which have some chance of stability he must work with representatives of the people being affected, both in the educational system and outside of it. In order to implement the planned change successfully he must work with groups. Maintaining commitment to the change in the face of fluctuating participation and modified plans will not be easy. Such a role transforms the planner from being primarily a change architect to becoming a change agent. Educational planning is both for and with people.

Along with other change agents and interventionists, the planner who plays these roles uses three basic methods: consulting – assisting the client to formulate and evaluate new or existing data; training – helping the client, through education, to change in a specific way; research – investigating data relating to the problem and to related conditions within the client system (or outside), which will improve understanding of possible solutions, and providing this information in a form usable for decision-making.

Conclusion

In my opinion, the educational planner's chief role is to assist in producing a healthy, responsive and responsible school system. Through his work the system should become more flexible and more accommodating to change. His skills provide it with the technical capacity to study and reconcile diverse demands made upon it by citizens, students, teachers, and administrators. Effective educational planning is that which will enable it to operate, subjecting itself to the influence of various forces but able to maintain its goals without fear of disruption. Such a system must have a clear understanding of the effect it is having upon the community, students, teachers and administrators. And it must be ready to weigh its procedures and policies against their disapproval, desires and legitimate concerns. Its officials must expand their concerns, beyond the end product in education (units of instruction, test scores, etc.) to the broader role of producing, within the education system, a climate which supports continuing research, training and innovation. The educational planner not only must expand his own concerns, he must also help his administrative colleagues make this transition. This role is graphically portrayed in the figure on the following page. When conceived of in this fashion, citizen or community participation becomes a mechanism to support the process of change going on at every

EDUCATIONAL PLANNER INTERACTION AND INTERVENTION MODEL



Source: Adapted from Sashkin *et al.*

level in the educational system. The planner becomes the catalyst *within* the system rather than technocrat external to it.

To accept such a role, poses certain critical questions for the planner which were voiced at the Toronto conference but not really debated:

- Is the training which most educational planners receive appropriate for those who will play such a role? If not, what additional training should they receive?
- Does the acceptance of such an enlarged role lie primarily with the planners?
- Does this role imply playing politics in the system or "social engineering" in the community, and should planners be expected to take the risks such activities involve?
- Does the participation of citizens really offer a positive good to the planning process or is it merely part of the social engineering aspect of the work?
- Is not the technical preparation of change plans a sufficiently demanding task without expecting the planner to become a social activator as well?
- Who will show the planner how he can involve the citizen in a meaningful way in technical work which must coordinate, to a timed pattern, the behavioural changes and procedural and structural reforms which involve many persons in a complex system?
- How far can the planner accommodate to these suggested role models and still consider that the work he is doing is educational planning?

In my opinion, the current trend among educational planners to create social distance between themselves and the beneficiaries of their services can only thwart their long-term objective of improving education. Particularly in the United States there has been a loss of commitment to public education. Those who direct educational systems and institutions are losing public credibility. To reverse this trend educational planners must involve the public in educational decision-making. They can do this through the design and development of cooperative procedures for planning changes in education. In any case, it is evident that they will simply not be permitted to plan the required changes in isolation.

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Susan Padro, Ted Vangel, and James K. Martin*

THE DESIGN OF MANAGEMENT INFORMATION SYSTEMS FOR SCHOOL BOARD PLANNERS

Introduction

Rising educational costs, diminishing educational resources, the call for public accountability and a commitment to greater educational opportunity characterize the conditions within which school boards in North America are now operating. This situation has resulted in increased awareness on the part of educational administrators and planners of the need for modern management techniques on which to base their decisions.

If the planner is to identify and assess alternative system futures and select the most appropriate one, if scarce educational resources are to be allocated in a rational manner so that school systems operate smoothly and efficiently, then it is critical that appropriate information be provided to support the managers. A Management Information System (MIS) forms the dynamic interrelationship between data acquisition, tools of analysis, information generation/dissemination and decision-making. An MIS for education may be defined as "a network of communication channels ... that acquires, processes, stores, retrieves and redistributes – i.e. *manages* – data used ... in supporting the individual and collective decision making process".[1] It supports managerial decision-making by supplying relevant, reliable and timely information upon which to base decisions.

Although the two terms are often used interchangeably, a useful distinction can be made between the concepts of "data" and "information". Data are the raw, uninterpreted elements of fact which are stored in files, on tapes and other devices which can be retrieved and processed in a variety of ways for different purposes. Information is the end result of the processing of such data, when it is in a form suitable (and useful) for input into the decision-making process. The key to this differentiation lies in the *relevance* of the material to decision-making and underlines the requirement that information must, in fact, be linked directly to the needs of the decision-makers in the system. Otherwise, it is still data needing further manipulation before becoming usable information.

The evolution of MIS in education (as well as in the private sector) began with the application of automatic data processing to routine, operational functions (such as payroll) wherein little, if any, attempt was made at integration. As the number and sophistication of the applications expanded, inefficiencies resulting from these disjointed operations gave rise to the concept of the *integrated* MIS. This usually meant rational integration of the data base for use in multiple operations and, therefore, the more efficient storage of data and generation of outputs. Such a system is more appropriately called a Data Management System, since its major emphasis still lies in the data base and the computer operations. As such data systems became increasingly efficient in generating masses of statistics about

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the operating system, it became apparent that much of the output not only was useless for decision-making, but indeed dysfunctional to this purpose. As a result, the emphasis of MIS began to shift from the computer and its specialized data base to the interface between information (from all sources) and the processes of decision-making. The final link in the evolution of the concept of the total, integrated MIS was thus established.

A number of large scale MIS's have been developed for school boards in Canada and the United States. One such application is the Total Information Education System (TIES)[2] project designed for the Minnesota School Districts Data Processing Joint Board. In 1972, it served 29 Minnesota school districts in the administrative, instructional and research areas of operations. The project is based at a regional, co-operative data centre, where the computer and data files are housed. Its central focus is on the development and maintenance of a uniformly-structured, integrated data base for each school district served, with the major concepts of the system defined as "data storage, file maintenance, data collection, data base management and communications".[3] The implication is that each user can utilize the data processing packages supplied by TIES and can also define his own specific information needs to be produced by the system based on the data stored in the files. The project's ability to attract and maintain its clientele attests to its success.

A large scale Planning and Management Information System (PMIS) project was initiated by the Council of Great City Schools. Using the Dallas Independent School District for the pilot implementation, the system's stated objectives were to support management in "strategic planning, other top management functions, research and evaluation and general reporting".[4] Like the TIES project, it was computer-bound and data-based. Although concerned with developing a prototype system for its member school districts rather than a centralized computer facility, the major concern was with questions of technology rather than the total scope of information required for decision-making.

A Management Information System for the Los Angeles Unified School District was being designed by the RAND Corporation at about the same time as these two projects.[5] It was intended to serve the planning and decision-making needs of the school system for the implementation of accountability and program budgeting. This is one of the few MIS projects in education where the focus is, in fact, on serving user needs by means of a systems analysis of decision-making functions and their associated information inputs and outputs. Although the results of the analysis are still translated into a computer-based MIS design, the philosophy of the approach nonetheless underlines the need to maintain user requirements as the major focus of the design process, rather than allowing the hardware to form the primary basis of the study.

This paper reports a procedure used for the design of Management Information Systems at the school board level of operations. It was developed in co-operation with two school boards in the province of Ontario, Canada: a large county board, covering both urban and rural populations, which has access to computer facilities, and a small rural county board with a manual system of record keeping. At the time of the study both boards were in the process of reorganization. By covering such a range of size of board, a large variety of typical board activities and decision processes could be examined, as well as the types of problems encountered in conducting an MIS study. The paper discusses the philosophical approach and the actual methods and procedures developed.

Approach to MIS Design

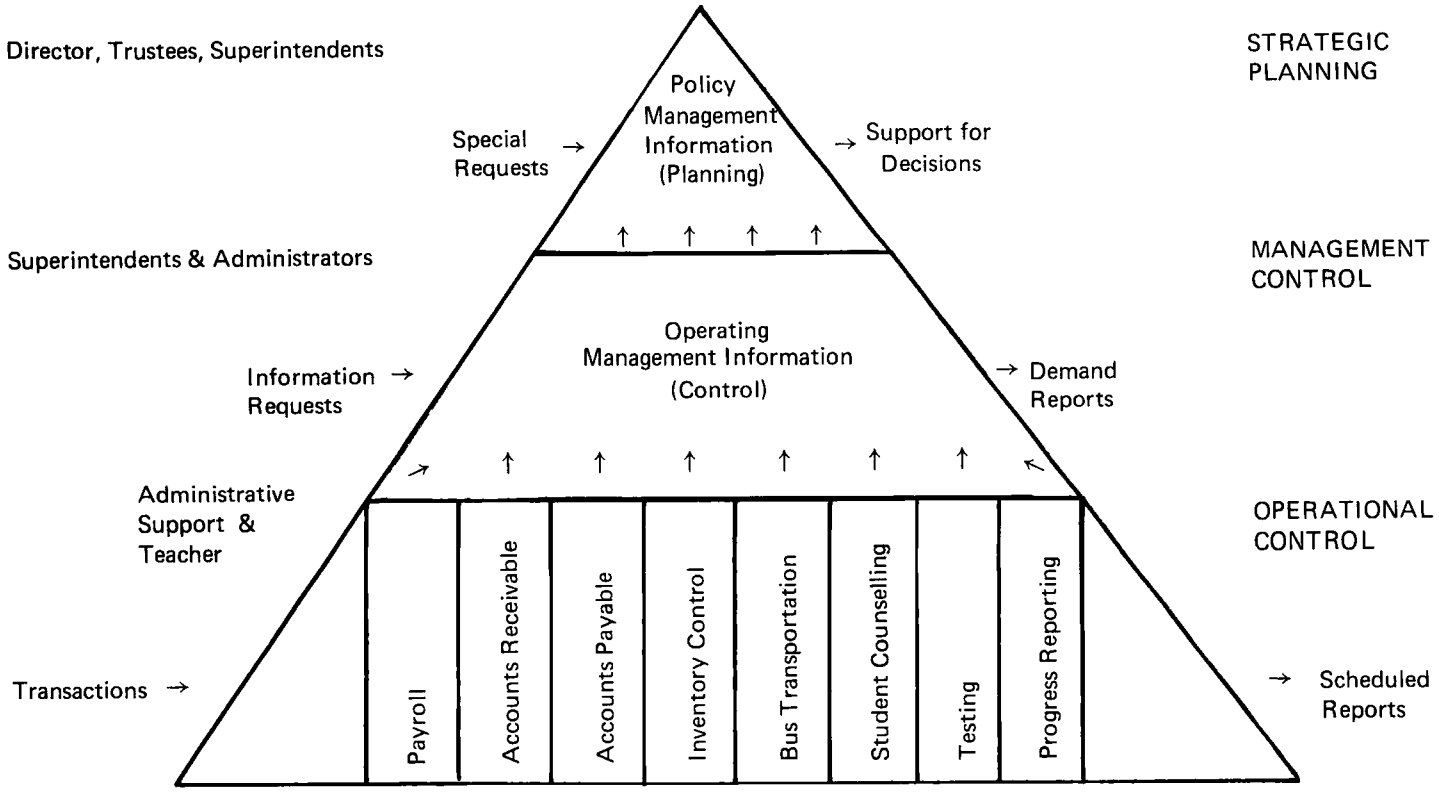
The design of these Management Information Systems was based on *user needs*. This means that the systems design was *not* based on the traditional computer-oriented approach of an MIS, with the hardware constraints being all-important. The computer was taken into account merely as one component of the over-all system, in conjunction with other media for storage, processing and retrieval (such as the manual component)—thus ensuring that information areas which could not be efficiently handled by the computer would not be overlooked. The aim was to design the total, integrated system which would best serve the information needs of the school board's decision-makers.

Given this frame of reference, a major component of the study was the identification of "users" and their information needs, as related to their management functions. User needs were defined in terms of specific functions: management areas, decisions, routine operations and reports. Given detailed analysis of users' needs, the data base would be designed and maintained in such a way as to satisfy these requirements in the most efficient manner by utilizing any combination of media available to the Board.

To ensure that users' perspectives were maintained throughout, the working unit for the project consisted of a team of systems analysts and key school board officials. (This is especially critical when dealing with large boards.) The role of this task force was to define the system objectives and specifications and the initial stages of user needs. The task force approach proved successful in allowing for close working liaison with school board officials, especially in the intensive personnel-oriented analysis stages of the study. It also provided insight into the operations of the board with their constraints and priorities. It ensured the relevance of the project to board needs and established the confidence, commitment and close working relationship with board personnel which is essential for the success of this type of study.

Since the information system was designed to expedite and assist the decision-making process, its general conceptual framework had to relate information to management levels of decision-making. A model of this type was developed by Robert Head.[6] Evans[7] related it to the work of school boards and it is this adaptation which is reproduced as Figure 1. Three levels of management decisions are graphically shown as being supported by the MIS: operational control, management (tactical) control and strategic planning. Operational control deals with the daily transactions of the system—purchasing, payroll, inventory control, etc. Management control is concerned with short-range questions of policy implementation. Strategic planning addresses itself to problems of policy setting and long-range planning. The information used by decision-makers can be classified as *operative* (geared to the operative and tactical levels of decision-making) or as *directive* (primarily for strategic decisions).[8] The MIS should be designed to incorporate the information required for all three categories of decision-making. The distinction between these types of information is useful because each involves different methods of generation, transformation and presentation. Moreover, directive information is likely to be less reliable and used in a less precise manner than operative information. Strictly computer-oriented information systems usually are geared to the production of operative information; they tend to ignore directive information.

FIGURE 1 MANAGEMENT LEVELS AND INFORMATION FLOW



Source: Evans, *op. cit.*

The model

An MIS has three major components: information structure, data structure and maintenance-monitoring procedures. Through the synthesis of these three, the administrators and planners of a school board can be provided with relevant, timely and accurate information on which to base their decisions and operational activities. The MIS also serves a second purpose, in terms of the relationship of the school board to the external environment: the information which boards are required to supply to a central authority, such as a Ministry of Education, or to the community and other external agencies becomes more accurate and readily available, lending greater confidence to the information they receive.

The information structure of an MIS is the component of the system which is directly linked to user needs. In it are defined the administrators' information needs at the school board level, the relationship of these items of information to each other and the network of decision-makers to whom the information flows. Within the information structure is included an information-generating subsystem which takes into account the tools and techniques for converting the raw data base into information directly useful for decision functions. Included here are procedures ranging from simple report-generation by aggregating various levels of data to sophisticated mathematical techniques utilized in the analysis of such data. In any event, the reports and analyses must be translated into format and content suitable for use by the decision-makers in their tactical and strategic planning roles. Because this area of the Information System is most directly related to actual decisions made, it must also be extremely flexible in adapting new transformation techniques and report-generating procedures and to conform to changing information needs.

The data structure (data base requirements) for the system is primarily determined by the information structure. Given certain user information needs and the definition of the analytical tools used to extract and derive the required information, it will follow that certain data must be provided as inputs to the process. Data definition also pinpoints the sets of data which have potential use in school board functions but are not immediately applicable. Analysis of the economic value of information is useful at this level of data definition. Two analyses must be considered at this level: the *conceptual* data base structure and the *physical* data base organization.

Design of the conceptual (theoretical) data base consists primarily of defining the types of data which will fulfil the information needs and reporting functions which were outlined in the information phase. The interrelationships or linkages between the data types must also be identified, and related closely to the information network and reporting system. Data flow and structure are also conceptualized at this stage.

Design of the physical organization (physical analysis) takes into account the physical constraints on the data, dealing with such questions as total data requirements—those available as well as those which must be collected. Media for storage, data formats and content are set up and collection procedures for data not immediately available are designed. Another aspect of the physical analysis is the design of file organization to correspond to data structure. The organization of data for purposes of reporting must constantly be kept in mind, especially in terms of the frequency with which they might be required and the response time permitted. This includes such considerations as frequency of access, methods of access and maintenance. These are, for the most part, affected by the media

on which data are stored, *and do not* consist only (or even primarily) of computer files. In fact, the integrated data base need not be housed in a single location; this depends upon the interrelationships of the data for purposes of generating information. Data unique to certain programs need not be stored in common with those required by many programs.

The monitoring of the information system involves the fulfilment of three functions—system control, data control, and system maintenance. The first consists of operational procedures for the overall running and maintenance of the MIS—a control function that schedules, initiates, and monitors operations. The second consists of procedures for data file maintenance and data preparation. Preparation includes gathering the data from sources, manipulating them, validating and storing them. File maintenance requires the design of procedures and methods to create a new data file or delete an old one, update data on a file and add or delete data on a file. For computer data files, on-line updating is a possibility that may be included with regular overall file maintenance.

The third consists of procedures which enable new modules to be added to the MIS. This is extremely important in providing flexibility in the system, both as new planning problems are delineated and as new techniques for the analysis of data are developed.

Figure 2 presents a graphic overview of the information system we have been describing. Data relevant to the information needs of the system's decision-makers are collected, evaluated (in terms of such criteria as accuracy and reliability), standardized and then stored in the data base files. The data specifically required for processing relevant to information needs at three levels of decision-making (strategic, tactical and operative) are derived from the appropriate data base files. Some elementary processing may be carried out at this "derivation" stage to make the data compatible with the higher-level processing which will follow. The derived data then are subjected to a transformation which converts them into usable information. This may be a simple report-generating procedure or complex sophisticated mathematical tools for analysis. The outputs (reports) may consist of both directive and operative information. Strategic decisions primarily use directive information; tactical and operative decisions generally require operative information. Each level of decision also generates information for the other two levels. Thus, a strategic decision will influence a tactical decision and this, in turn, will impinge upon an operative decision. Conversely, but less obviously, the decisions made at the operative level influence tactical decisions which, in turn, may modify strategic decisions. The outcomes of decisions then are evaluated, and, as necessary, corrective modifications are made in the transformation module, the specific derived data, the structure of the data base files and/or the collection of new data. While the system is operative, monitoring and maintenance procedures are constantly in effect to ensure smooth and efficient operations of the system.

The outcome should be an integrated MIS designed for decision-making at the school board level and based on users' information needs in terms of major management areas and levels of management.

The design should be modular, open-ended, providing flexibility in its use and the framework for expansion of the system. Its outputs will be:

- User needs: Expressed in terms of decisions, reports and transactions all related to the major management areas and levels of management.
- Information structure: Identified as the information users' need; description of the

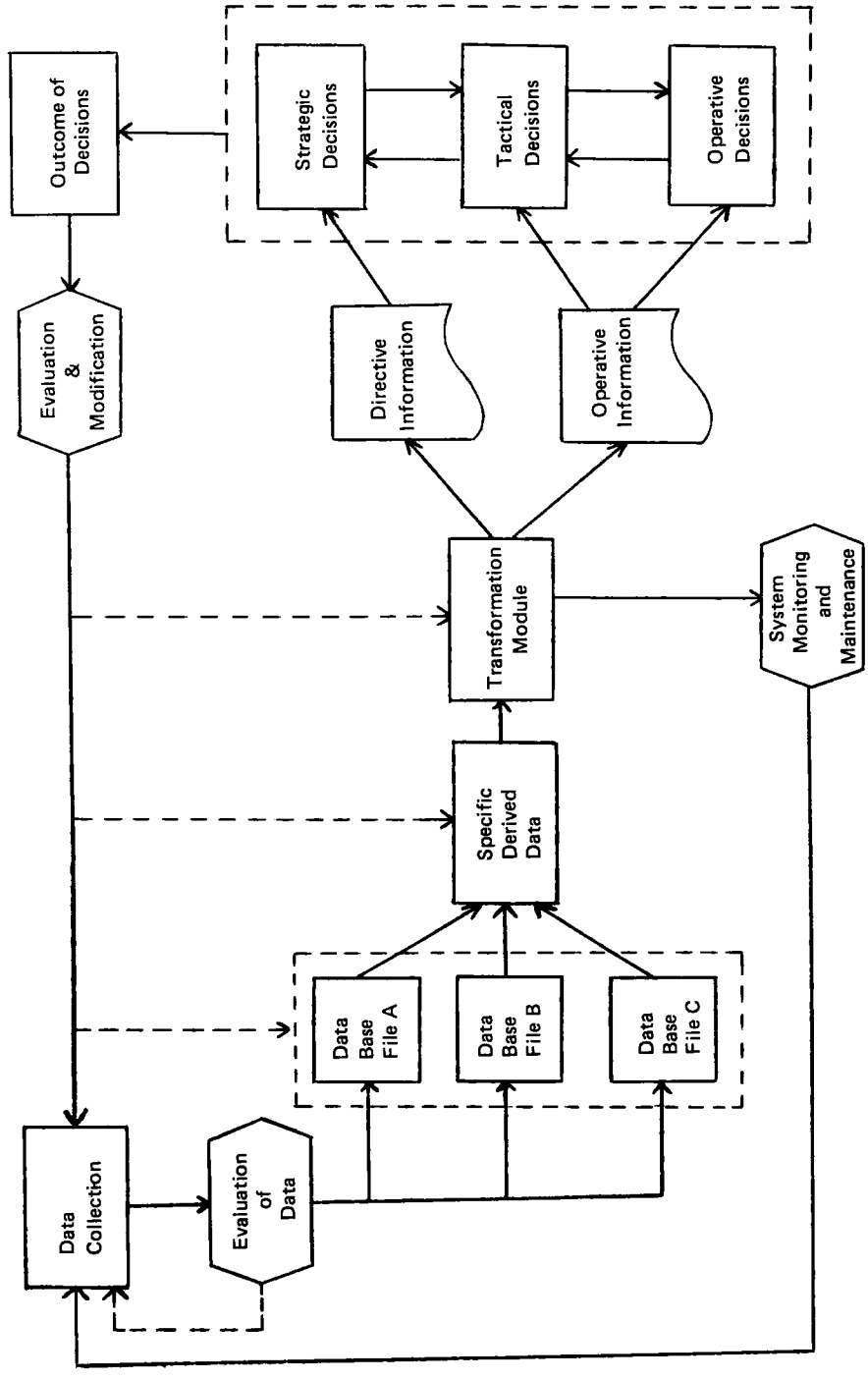


Figure 2: OVERVIEW OF MIS

flows of information through the system; and the formation and organization of the information items according to the user needs.

- Data structure: Defined as the data to be stored in the data base; the organization of the data base to reflect user needs and maintenance requirements; and the procedures for data base maintenance.
- Systems Monitor: The set of methods and procedures for the scheduling, controlling and maintenance of the MIS.

Procedure for MIS design

The development of an MIS is based on a systematic procedure of analysis and synthesis. The approach described in this paper begins with analysis identifying the users and their requirements, followed by more detailed analysis to define the sources of data and the flows and timing of information to serve the users' needs. The synthesis stage then follows, streamlining the flows of information and the data base, and developing procedures for system maintenance and monitoring. A general outline for MIS design would be:

INITIALIZATION:	Task Force Designation
ANALYSIS:	Definition of Major Management Areas
	Analysis of Major Management Areas
	Analysis of Information and Data
SYNTHESIS:	Design of the Information Structure
	Design of the Data Structure
	Development of the System Monitor-Maintenance Procedures

Initialization

At the beginning of the project a task force of systems analysts and key school board officials set the terms of reference for the work of designing the MIS, identifying the key users of the system and the major areas of management to be served.

Analysis

The major areas of management are identified with their key personnel. This is a critical step since these comprise the major activities of the school board and form the focus for the MIS design. An example of a set of major management areas is given in Table 1.

The analysis consists of two stages, the first providing a general overview, the second the details. In the first stage, a series of interviews of the key personnel (identified as having prime responsibility for each management area) is conducted in order to break down each area into its set of component parts. The definition of the components should be such as to provide an overall understanding of the operation of the management area. In addition, the information inputs, outputs and key personnel for each component are identified. Table 2 gives an example of a management area broken into its component parts and their associated inputs and outputs, and Figure 3 is a flowchart showing the general overall operations of this management area.

In the second stage extensive interviews are conducted to obtain a detailed description of every aspect of each component of a major management area. The object is to ascertain the set of user needs, personnel, information and data needs, data sources and timing of

TABLE 1 MAJOR MANAGEMENT AREAS OF A SCHOOL BOARD

1.	Budget Process:	1.1	preparation
		1.2	control
2.	Accounting Function:	1.1	accounts payable
		1.2	accounts receivable
		1.3	payroll
		1.4	general accounting
3.	Supply Function:	1.1	purchasing
		1.2	stores/inventory
		1.3	courier services
4.	Accommodation Supply:	1.1	capital projects
		1.2	facilities inventory
5.	Plant Operations & Maintenance:	1.1	operations
		1.2	maintenance
6.	School Curriculum (Program)	1.1	development
		1.2	research
		1.3	evaluation
		1.4	operations
7.	Special Student Services:	1.1	identification of special needs
		1.2	provision of required services

activities for each management area. An example of the breakdown of a component of a management area into a set of activities and their related information and data needs is given in Table 3.

In the final stage the findings of this detailed analysis are compiled to determine the overall requirements of the MIS. This will include a list of all of the decisions, reports and transactions that define the user needs, their associated information and data requirements, the sources of data and the timing of activities. Analysis is also made of information requirements, processing and flows as well as the data requirements, processing and acquisition. And the interactions between major management areas are studied to produce a total overview of the operation of the school board in terms of the processing and flows of information.

Synthesis

If the foregoing steps have been well done and a satisfactory synthesis is conducted, the goal will be achieved of satisfying user needs efficiently and effectively through the design of their MIS. From the analysis, user needs can be expressed in terms of decisions, reports and transactions—all classified under the headings of major management areas related to levels of management. This taxonomy of user needs provides the frame of reference from which the information requirements of the MIS are ultimately defined.

TABLE 2 OVERVIEW OF A MAJOR MANAGEMENT AREA OVERVIEW

MANAGEMENT AREA: BUDGET PREPARATION COMPLETED BY _____

Step. No.	DESCRIPTION	INPUT[1]	OUTPUT[2]	PARTICIPANTS/LOCATION
1	Prepare budget guidelines	1. Budget format 2. Expenditures – current year to-date 3. Budget – current year	1. Budget Guidelines – forms – instructions – expenditure summary (current year)	Superintendent of Finance
2	Prepare school requests	1. Cap. current requests 2. Special requests 3. Maintenance requests	1. School requests	School staff
3(a)	Prepare Area Requests, priority rank	1. School requests 2. "Overheads" 3. Budget guidelines 4. Consultation – Finance	1. Area requests 2. Requests to Departments	Superintendents – Families ofsschools
3(b)	Prepare Department requests, priority rank	1. Program requests – Dept. 2. Program requests – areas 3. "Overheads" 4. Budget Guidelines 5. Consultation – Finance	1. Department requests (forms BD-1, 1(a), 2(a))	Department Heads
4	Prepare Superintendency requests, priority rank	1. Area requests 2. Department requests 3. "Overheads" 4. Budget Guidelines 5. Consultation – Finance	1. Superintendent requests (Form BD-2)	Superintendents
5	Total Budget Compilation	1. Superintendent requests 2. Dept. and Area requests	1. Budget requests	Superintendent of Finance
6	Budget Review – Internal (Adjust, revise)	1. Budget request 2. Consultation – Supts. Dept. Heads 3. Revenue Estimates 4. Ceiling calculations	1. Revised Budget Request (approval in principle)	Administrative Council
7	Budget Review – F & B Comm. (Adjust, revise)	1. Revised Budget Request 2. Revenue Estimates 3. Ceiling Calculations 4. Consultation – Supts.	1. Final Budget Request	F & B Committee
8	Budget Approval	1. Final Budget Request	1. Approval Budget	Board

[1]Input – the information required to carry out the step.

[2]Output (1) an action/activity as a result of the step.
(2) an information item e.g. a report, or information to be used as input into another step or decision.

Figure 3 FLOWCHART OF THE OVERVIEW OF A MAJOR MANAGEMENT AREA: BUDGET PREPARATION

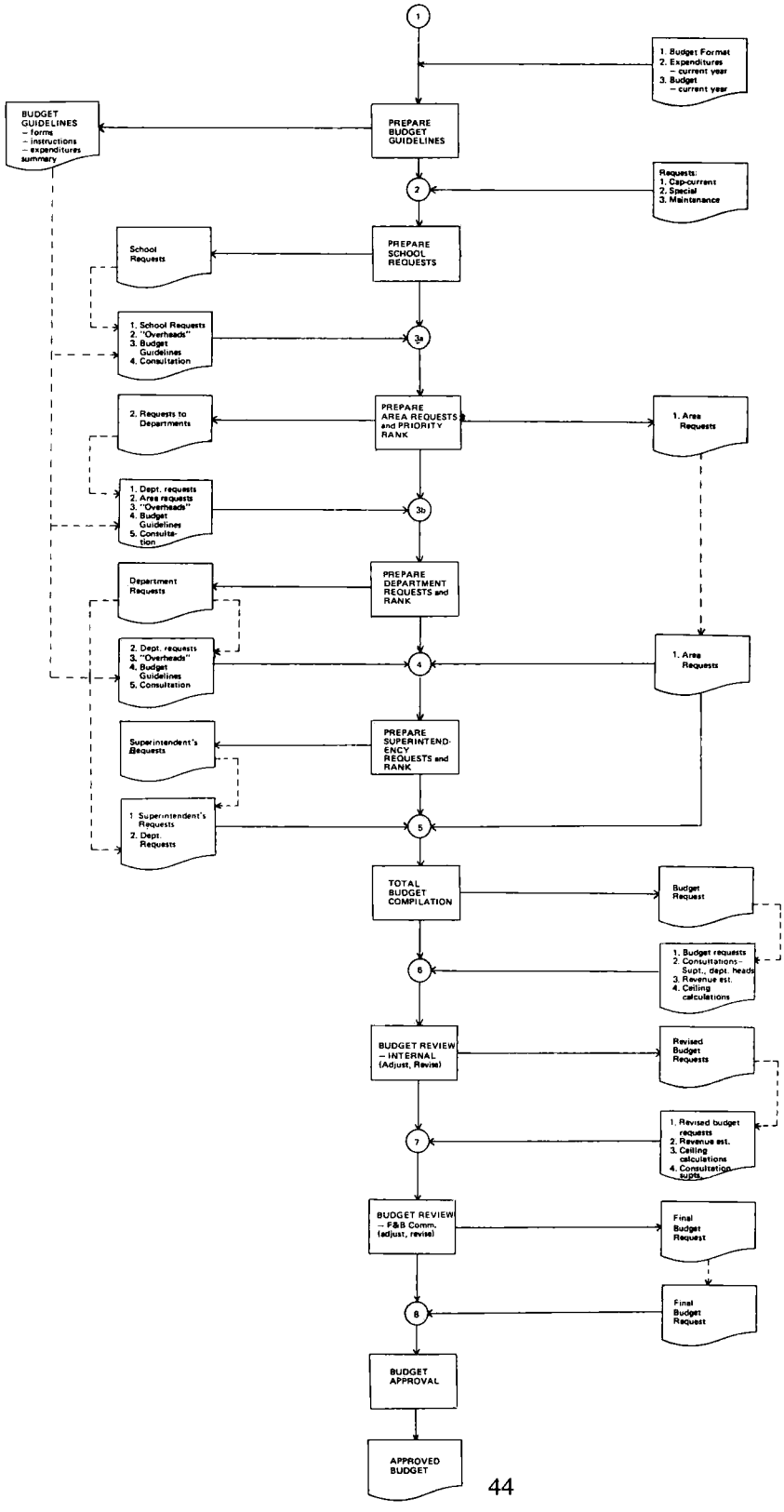


TABLE 3 DETAILED BREAKDOWN OF A COMPONENT OF A MAJOR MANAGEMENT AREA

DETAILED PROCEDURE ANALYSIS

AREA: BUDGET PREPARATION COMPONENT: DEPARTMENT REQUESTS COMPLETED BY _____

OBJECTIVES: 1. Completion of Form BD1 (a), BD1 and BD2 (a)
2. Establishment of priorities
3. _____

Step No.	DESCRIPTION	INPUT INFORMATION		OUTPUT		PARTICIPANTS/ LOCATION
		DESCRIPTION[1]	SOURCE[2]	DESCRIPTION[3]	TIMING[4]	
1	Determine staff requirements	1. Current staff list 2. Number of new schools	Staff file Board Minutes	BD1(a) completed	October	Department Head
2	Complete Form BD1	BD1(a) 1. Previous Year's budget 2. Expenditures to date 3. Anticipated inflation 4. Anticipated needs	Approved budget Printout Business publications and supplies Age of equipment. New projects, current state of equipment	BD1 completed	October	Department Head
3	Complete Form BD2(a)	BD1, BD1(a)		BD2(a)	October	Department Head
4	Establishment of priorities	1. Board priorities 2. Job performance Environmental requirements 3. Budgetary requests	Superintendent Job descriptions BD1(a) BD1 BD2(a)	Justification of expenditures to Superintendent	October	Department Head

[1]Input – the information required to carry out the step.
[2]Source – data sources from whence the input information items are derived – e.g., reports, forms, files, etc.
[3]Output – (1) an action/activity as a result of the step.
– (2) an information item – e.g., a report, or information to be used as input into another step or decision.
[4]Timing – approx. date at which output is required.

TABLE 4 ORGANIZATION OF USER NEEDS

Management Levels / Management Areas	Decisions			Reports		Transactions
				Status	Control	
	Strategic	Tactical	Operational	–	Tactical	Operational
Management area 1						
Management area 2						
⋮						
Management area i						

Table 4 illustrates the format for the organization of the information to reflect the needs of users, and consequently the taxonomy of user needs.

To ensure users are provided with relevant and timely information, the design process must develop the following relationships and designate them in a matrix format:

Matrix 1: user needs to information needs, to time required
Matrix 2: information to data elements, to time of data transformation (with definition of the necessary transformational processes)
Matrix 3: data elements to data sources, to time of data collection

This will allow the information collection, transmission and transformation to be specified and rationalized.

The synthesis consists of the design of the information structure, the data structure and the monitoring-maintenance procedures.

Design of the information structure: The information must be organized to reflect the user needs as defined. Matrix 1 is developed as part of this process and the result is a streamlining of the flows of information through the system by eliminating redundancies, correcting deficiencies and increasing efficiency.

Design of the data structure: The design of the information structure forms the basis for definition of the system data base. The elements in the data base must then be organized using Matrix 2 to relate information to data elements to time of transformation. This leads to the development of Matrix 3 which relates these data elements to their sources and time of collection. Methods and procedures are then developed to handle the functions of data gathering, preparation, maintenance and transformation. The process of data transformation acts as the interface between the data and information structures since it converts raw data into useful information.

Development of the system monitoring-maintenance procedures: The procedures for operating and controlling the MIS are developed in this final stage of system design. The timing of management activities as compiled in the analysis stage is used to prepare a schedule of activities for the operation of the MIS. The maintenance function includes data control and systems modification. Data control is concerned with the tasks of data gathering, preparation, retrieval, transformation and maintenance. The procedures for data management developed in the previous section are organized to fulfil this function. System modification deals with the capacity to incorporate change into the MIS. The end product is a set of procedures that outlines the control and maintenance functions of the MIS by scheduling, initiating and monitoring its operations.

Implementation considerations

In undertaking the study of an MIS (especially with school boards), there are a number of matters which could cause substantial problems if overlooked by the system designers. The most serious involve the system's personnel but others relate to time delays and costs.

Since the first phase of the procedure for analysis is extremely labour-intensive, requiring a great deal of time of key board officials, it is essential to ensure their cooperation and commitment from the beginning. Since lack of commitment often is due to lack of a perceived need for the study, it is important that the system designers ascertain early in their work that the system does, in fact, require an MIS study and that senior officials understand and accept this need. This commitment should be conveyed to the rest of the staff by the Director of Education through a process of staff orientation (in which the designers take part), before any demands are made on officials' time. If senior officials realize the need for the study and the advantages they themselves will gain from it, they will more readily accept the demands made on their time, and their responses to interviewers will be prompt and thoughtful. If a team approach is used in conducting the study, the board personnel on the team will assist in ensuring its success. Then it is less likely to be seen as imposed by some outside group. Furthermore, such an approach also provides the necessary authority often lacking where the operation is a strictly "external" one.

Although the team appraoch alleviates some of the personnel-related problems, there remains the very real difficulty of the amount of time needed to have busy board officials define in detail their management functions and decisions, and their associated information needs. No matter how cooperative the personnel may be some delay in timing must be expected at this stage in the process. Whatever the ultimate payoff expected, an MIS study seldom is given top priority.

Since most educational officials do not normally have time to analyze their decision-making processes and information requirements, the analytical stage of the study usually reveals their difficulty in verbalizing processes and needs. This can only be overcome by carefully directed interviews which draw out the details of functions, activities, procedures and their relevant specific information needs. We have found that once they are convinced of the ultimate benefit, officials are pleased to have the opportunity to describe in detail, and subject to scrutiny and analysis, procedures which they normally take for granted and would not otherwise have the time to examine.

Organizational changes taking place in the board while the analysis is underway can also delay the study. But unless they cause substantial changes in the actual *definition* of

user needs, the time adjustment required should not be overwhelming. Ideally, where an organizational change is pending, the study for the MIS should be initiated *after* the change has been completed. But this is not always possible. Frequently, a system approaching organizational or structural change wants to "sweep-in" all the changes at once (MIS included). Having gone through the turmoil of the organizational reform officials want a rest; they need time to learn their new roles and functions; they are irritated with yet another set of "accommodations" to be made – this time to the MIS team. Knowing this to be so, Directors of Education are likely to prefer that the MIS study *coincide* with the implementation of an organizational change.

To understand the costs of an MIS study a large variety of factors must be taken into account. The least are the direct costs of the professional systems analysts. The heavy involvement of key board officials represents a substantial cost, one which the board must accept if the product is to be of value. There are also costs associated with changes which will probably be required by the system design: hardware, software development, file reorganization, and so on. New staff may be required to run the new system, or current staff may have to be retrained.

Some of the most useful benefits of an MIS study are the by-products resulting from the systems analysis at the first stage of the study. The board and its senior personnel gain insight into the operation of their entire system, a type of understanding which otherwise would not have been possible. In addition there is direct benefit from streamlining the flow of information, producing efficient reports, routine operations and data organization, so that the quality of information input to decision-makers is improved. Valuable staff time can be saved through the elimination of redundant paperwork and the need to sift through useless data when a decision has to be made.

The planner working for a school board should be intimately involved in the design of the MIS with the systems analysts engaged upon the project. More than other education officials he will know the data required for his work and the type of information he must provide to non-technical officials and lay board members. More than his colleagues he is familiar with the logic of mathematical and computer processes. To some extent he can play an "education" role between the two groups. He must learn enough about the type of design process described in this paper to ensure that it is carried out well. If it does not satisfy his needs he has little hope of being able to prepare adequate plans, let alone worry about their implementation. In fact, it is not too much to claim that the design of an MIS is a prime opportunity for a school board planner. He can use the MIS study itself as a tool for change.

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David L. Groves and Gerald H. Cross*

TOWARD A THEORY OF CURRICULUM DEVELOPMENT IN 4-H NATURAL RESOURCE PROGRAMS

Introduction

The Cooperative Extension Service has been an educational force of great influence in the United States for 60 years. Its history is closely associated with the country's needs for food and fibre. In 1862 the Morrill Act and in 1887 the Hatch Act established in each state a land grant university and an agricultural experimental station recognizing that their future growth was linked to the development of trained manpower and new technology to service the demand for food and fibre. During these years, the United States Department of Agriculture (USDA) was established by an act of Congress; and as the land grant universities and USDA began to grow, it became apparent that both had a similar mission and would benefit by cooperation. Their growth related directly to the transmission of information to the public through some type of educational institution. As this became apparent, Congress in 1914 created a cooperative extension service through the Smith-Lever Act. This act established the service to transmit to the public the latest scientific information in agriculture and home economics from state and federal research centres. If it was to be helpful to the recipient, the information provided had to be in a practical down-to-earth form. This act furnished federal, state and local money for content and program specialists on the campus of the land grant universities, and for the organization of an extension unit in every county and city in the state. These units were charged with establishing working relationships within the community to assess peoples' needs, and use the resources of the state and federal research centres to help solve their problems. Although originally designed to assist rural America, the programs were expanded to serve people in agriculture, natural resources and the environment, home economics, 4-H and youth, and community resource development.

The development of the extension service in the state of Virginia has paralleled the national growth. Its agricultural extension effort has been such a success that the program has been extended into non-traditional areas. Agents in the field are supported not only by faculty in agriculture and home economics, but also by those from architecture, many disciplines of arts and sciences, business, education and engineering. The grass-roots approach of the extension program became successful through a variety of service and educational programs designed to help youth and adults develop the ability to make better decisions. In part the success is due to its unique partnership among federal, state and local governments. In addition, it has built firm working relationships with business, industry and many social institutions. The service strives to balance state and national goals with local needs and priorities, and has had to discover the means to make constant program evaluation and change programs to meet the changing needs of society.

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However, the past successes of the extension service will not guarantee its success in the future. The continued emigration of people from rural to urban and suburban communities, environmental and energy crises, demands for better land use planning, inflation, increase in leisure time, and greater ecological awareness are having a profound effect upon society. Many current problems are directly related to the supply and demand of natural resources which are the raw materials needed for the production of goods and services. Decisions must be made now which will ensure that these resources can be utilized and yet conserved for future generations. People and communities must make these decisions and they can only be helped to do this through comprehensive planning and educational programs which will change the society's life style from consumption to conservation.

The increasing demand placed on the world's natural resources by expanding population adds a new dimension to problems. Traditional natural resource program content areas such as soil, water, forestry, wildlife, and fisheries are being marshalled to help solve the problems. Terms such as urban forestry, urban wildlife, urban soil, urban water, urban land use planning, and urban environmental quality are becoming increasingly common. The public, especially youth, are beginning to recognize and accept the impact that decisions about natural resources have upon their society.[1] The extension service must become more attuned to assessing environmental changes and identifying the needs of new audiences. They must redefine their programs—particularly those for youth. Often youth serve as stimulators for the development of new community action programs.

Recent changes in the disciplines related to natural resources should be incorporated into a comprehensive extension program, one which will reflect long range objectives and goals and not be a faddish or emotional reaction to crises. These educational objectives and goals must consider the needs of all the society today as well as anticipate their future needs.[2] This paper reports a study undertaken to explore curriculum considerations in 4-H natural resource programs, so that a comprehensive model might be formulated to help extension organizations remain effective agents within society.

4-H A perspective

Four-H is an out-of-school experience that emphasizes learning-by-doing in practical, real life settings which supplement the educational efforts of the home, church, and school. Although the extension service works primarily with 4-H, it is also involved with other youth development programs in the community. To understand the current role of extension youth programming, it is important to examine its historic role. Traditionally, in the United States, 4-H programs were associated with rural life. In the past youth generally spent their life in the community in which they were reared, and usually they ended their formal education with the completion of the elementary school. Their opportunities for gaining experience of any type beyond the activities of their community were limited. Their formal educational experiences did not prepare them for the kinds of lives they were destined to lead. There developed, therefore, out-of-school programs to complement youth's scant formal education by providing opportunities to apply the "schooling" skills to practical situations. Extension youth programming became an educational force in the socialization process of the youth of a rural society.

The backbone of the 4-H program has been its corps of volunteer leaders who served as teachers. The professional in each unit takes care of program planning (curriculum design), staffing, and implementation. The work projects and related activities are educational tools employed to bring about desired changes.

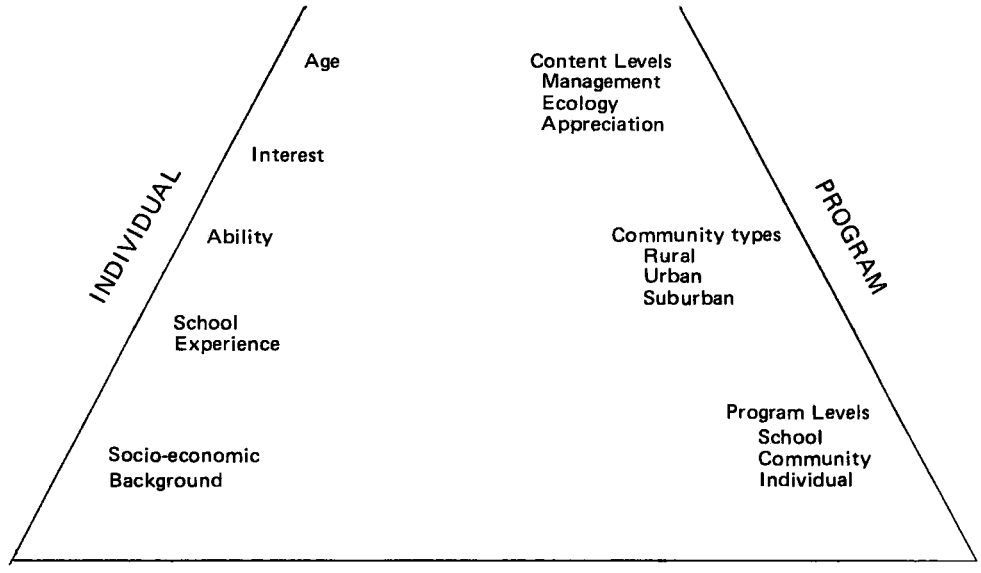
The youth of a nation (ages 9-19) are one of its great resources and these formative years are the important period during which they develop many of the skills and attitudes they hold throughout life. The function of the extension education program is to provide youth with exciting, interesting, practical learning experiences which will help them understand themselves and their environment, and become useful and responsible citizens.

Although the format and activities included in the programs have changed over the years, the emphasis on practical activity which can provide learning-by-doing experiences has not changed. To some extent formal education has changed in the direction of the extension service philosophy—e.g., two current trends are "learning-by-doing" and "developing life skills". Because formal educational activities have adopted a similar format, a number of cooperative programs have been developed with extension to provide the child with experiences which will integrate formal and informal learning processes. The potential benefits of this relationship are only hinted at as yet. Further cooperation must be explored.

4-H Curriculum constraints

Many of the 4-H natural resource programs currently in use were formulated in piecemeal fashion around an industrial focus, or an occupational interest—e.g., with a special interest in forestry, or wildlife (hunting, trapping, fishing, being a guide). This is fine, as far as it goes. However, it does not meet all the needs of the 4-H audience. There should be comprehensive planning to develop new programs and adapt the old ones. This need has been recognized; there are many references to it in the literature.[3] The model shown in Figure 1 graphically represents some of the program and individual constraints which must be considered in defining curricula. The analytical work of Donnelly, Kenyon, and others stressed these factors.[4]

Figure 1 CURRICULUM CONSTRAINTS



Programs

Existing 4-H programs are "management" oriented. However, in order to *understand* how to manage a natural resource, understanding of the ecological relationships among resources is required. Without this, the iteration of management principles is meaningless; the bits and pieces of disjointed information lead only to confusion (and eventually to disinterest).

A key element in formulating a successful program is stimulating and maintaining the youngster's motivation.[5] The member must be able to incorporate the information and experiences into his life style and see them as relevant (for either the present or the future).[6] A key element to motivation is the appreciation that most of the projects or activities are designed around a recreational activity. This permits youth to learn more about their hobbies and interests, and provides the opportunity to explore new interests. Initially only a description of the content area is provided. But some members will go beyond only the level of appreciation to that of ecology or management. The purpose of the ecology content is to provide scientific understanding of the "why" of resources and resource interaction. The purpose of the management content is to provide understanding about how resources can be used without being abused. The object is to provide members with opportunities to explore new content alternatives and by learning-by-doing involve them in scientific exploration and community service. One advantage of such an approach is that instruction can be tailored to the needs of the individual.[7] The theoretical and practical aspects of the program content can be so synthesized as to enable the participant to become actively involved in the conservation movement.[8]

Natural resource programs in 4-H have had a rural orientation. Today such an emphasis would miss a large segment of the nation's youth. Unfortunately many 4-H urban and suburban members simply are not exposed to situations where they can learn to appreciate and understand the complexities of natural resource problems.[9] For example, 4-H youth living in large cities find it difficult to relate to the natural wildlife of forests or farms (which they have never seen) but readily identify urban wildlife. Their programs should be based on learning experiences derived from the urban environment. Different sorts of natural resource programs must be aimed at rural, urban, and suburban youth. In a democracy, where every citizen shares the responsibility for sound and efficient natural resource management, all youth should acquire basic understanding of resource development and conservation. The concepts which are the basis for rational decisions can be learned by using practical experiences drawn from a variety of environments.

Much of the program material currently available was not designed to provide flexibility of use. It is not appropriate for different types of situation. Careful consideration must be given to the various program levels at which 4-H natural resource materials may be used. In some cases individual members work independently on a project. In others the community or school club collectively takes on an organized activity. Materials to support both sorts of program must be sufficiently adaptable to be used at different program *levels.* Publications and printed materials which may be suitable for an individual would be too expensive for all members of a group. A school club may need types of material suitable for presentation to an entire class, whereas a community club will want materials available for small group experiences—rather than for presentation, exhibition or demonstration. Whatever the level or type of program, its activities and materials must actively involve members in their own learning process.

Programs must consider the age of members. 4-H programs too often have been designed for a single age level, which restricts their use. Each should provide for a range of ages. They should also be designed to meet a variety of ability, school experience, and socio-economic backgrounds. For example, a 4-H fishing project designed to stress skills needed for fly fishing will have little appeal to youth living in areas where cane pole fishing is popular. Lack of flexibility can usually be traced to poorly thought-out program objectives. A program should enable youngsters to start at the appropriate level, and progress through a series of activities and learning experiences as interest and motivation dictate. Sometimes this can be accomplished by providing for open-ended activities; these are often overlooked in 4-H programs. Where most of the materials used are in published form, there is the tendency to make little use of such audio-visual materials as films, slides, transparencies, etc. New delivery systems must be found to increase the flexibility and attraction of programs, especially if other target audiences and broader content areas are sought. The key to developing quality program aids is to keep them as simple as possible, so they may be adapted to a variety of situations.

It is also desirable to look at the members' school curriculum to identify what exposure they have already had to important concepts and information related to natural resources. The 4-H programs rarely build upon learning experiences gained through the regular school curriculum, though this would seem to be an obvious starting point for most activities. For a program to be challenging, it should be built upon learning experiences already gained and carry them to the point of "new" discoveries. 4-H youth are soon "turned off" a program which just repeats things they already know. And they quickly reject the superficial or oversimplified. Instructors must not condescend or talk down to them. Todays youth are used to "listening in" on adult films, television and radio programs and they resent being given some special "children's version", particularly of a science topic.

Few 4-H programs are designed for such special groups as the handicapped, mentally retarded, low income groups, or minority groups; and yet these particularly need to have their experiences and mental horizons broadened. Natural resource materials should be adapted for such groups. Many 4-H projects, being of a highly tangible nature, would be good instruction media for handicapped youth. For example, the mentally retarded will gain less from viewing colour slides of animals than from touching stuffed models of animals. With a few special arrangements, the handicapped can participate in a beautification project by tending a garden or planting trees.

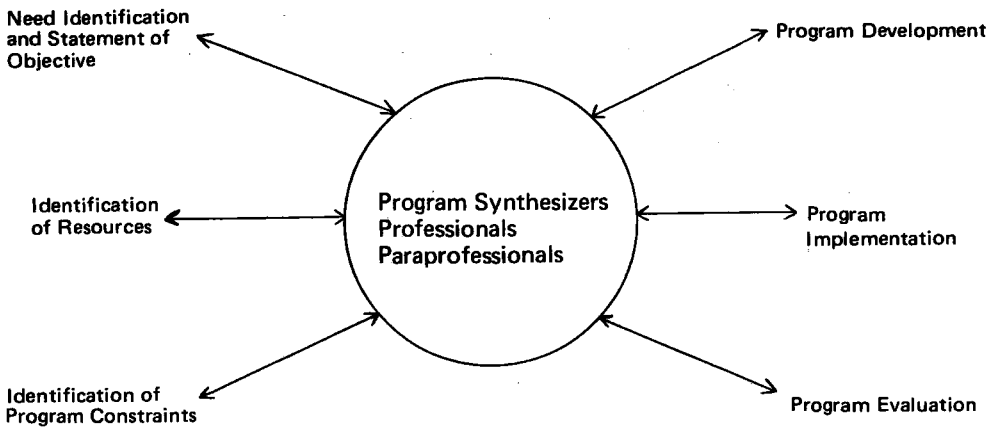
A planning model

How can all these considerations be integrated into comprehensive planning for 4-H programs? A number of critical curriculum design activities are shown in the model depicted in Figure 2, which incorporates much of the thinking of Covert, Roth, Reeder, Mittelstaedt and Frank.[10]

The focus of the curriculum planning process should be the individual and his environmental constraints. The curriculum must permit variability in content level, community type, and program level, as well as variation in the age, interests, ability, school experiences and the socio-economic background of the participants. The program should be designed to recognize motivation and use it to stimulate interest and involvement.

The first design step is to identify the needs of various target audiences and the objectives of their programs. This activity must involve the 4-H leaders at the local level since

Figure 2 PLANNING PROCEDURES



they are best able to recognize needs. Objectives should be stated in behavioural terms that relate to the cognitive, affective, and psychomotor domains. Activities and performance levels must be established that are readily observable, so that the members' behaviour can be used to assess program effectiveness in the evaluation phase.

The second step is to identify the resources that are available to meet the stated objectives. Resources within communities vary greatly. The whole community should be used as source material for program development. A key element here is the imagination and ingenuity of the designers to recognize and obtain natural, man-made, fiscal, and human resources.

The definition of program constraints is generally all too easy. In addition to the usual ones involving materials, methods and sequencing of the experiences, there are elements which will make a program appropriate for one group and unrealistic for another—factors which stimulate or inhibit a program, assist its orderly development or make its management difficult. Elements have to be presented in the proper mix to serve as checks and balances so that the program will not develop in an unorganized fashion.

As the resources and constraints are matched and alternatives are related to objectives so that choices can be made, a program emerges. The criteria for selection of the materials, experiences and activities is the effectiveness and efficiency with which they help stated objectives to be achieved. Program designers must keep firmly in mind that there are many ways to achieve the same objective, and everyone involved will have a different scheme for mixing resources and constraints to create a program. At this point there should be considerable devolution of decision-making so that programs take on the flavour of the community being served.

The next step, that of program implementation, is critical since it involves so many sensitive questions of acceptable delivery systems. The delivery system must be accessible,

simple to use, and have broad, general acceptance. It must fit the needs of the professional and para-professionals since they are the persons on whom the success or failure of a program rests. It must allow for flexible adaptation of materials and ideas to the particular situation.[11] The program synthesizers ultimately will select the best program elements from those which have been suggested. It cannot be emphasized too strongly that, however careful the initial design, the success or failure of a program depends upon the ingenuity of the para-professionals. Implementation is a delicate process; adjustments always have to be made in programs; and in a very real sense a successful program is unique.

There remains a final step. Once the program has been implemented, it must be evaluated.[12] Only through effective evaluation can it be determined whether the objectives of the program are being met. So the design of the evaluation should go hand in hand with the design of the program. Programs should be evaluated in behavioural terms. Evaluation makes this a dynamic process, continuously responding to the needs of the target audience, changing as the audiences change. If the objective can be stated in terms of behavioural outcomes (not an easy thing to do, but worth the effort), evaluation becomes much easier because the parameters of measurement are implicit in the objective. Like the implementation process, the evaluation process is itself dynamic; it becomes refined and changed with experience.

This outline of a process for planning 4-H programs is ambitious. That is readily admitted. But only when such planning steps are incorporated into 4-H extension programs will this organization, which has served such an important role in the past, be able to become once more an effective agent of change in our society. The process outlined above will lead to the development of programs that are responsive not only to today's needs but to those of the future. Through such a program, extension can fulfill both its service and educational functions to the community. The United States is in need of such leadership, especially at the grass roots level, because this is where changes must come in the American life style. Even more important, youth programs can serve as a focal point for more effective community action. Many times throughout our history youth programs have served to initiate new types of activity which served to solve community problems. Adults have been willing to try new solutions and have committed themselves to programs on behalf of their children—innovations they would not otherwise have considered—because they recognized that their communities had a vested interest in the children's future. Youth serves the function of a natural change agent within the family and community. They are receptive to new ideas and are less emotionally attached to the status quo. Their groups and programs can serve as a catalyst to help solve their communities' problems.

The planning process in developing 4-H curricula is an educational process in itself. This would be an example of using planning not only as a tool for change but also as an educational and incentive device to change the persons and groups who will direct the change.

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THE PLANNING OF DAY CARE: A REPORT ON THE USSR

Introduction

While the group upbringing of children[1] is only now becoming a trend in the West, in the USSR it is a socially accepted policy as old as the Soviet state itself.

In Ontario, enrollment in senior (and more recently in junior) kindergarten has increased steadily, as may be seen from the Table below, and the demand for preschool places continues. It has been estimated that in 1972 some 3% of Canadian working mothers' children under six years of age were attending centres which were classified as day nurseries or nursery schools.[2] At the beginning of the '70s some 10% of Soviet children in the age group 0-3 and 20% in the age group 3-7 were using preschool facilities.[3] The difference in the participation rates illustrates what has been until very recently the difference in the attitudes of Canadian and Soviet society to group care of young children. But, as E.B. LaCrosse observes these differences seem to be rapidly diminishing, "Movement in the field of early education in the past five years has been like an avalanche".[4] Developments in Ontario and Canada seem to be typical of those in other western countries. They demonstrate our society's growing, if reluctant, acceptance of various preschool settings as agencies to complement the family's raising of children.[5] This acceptance is a well established social reality in the USSR.[6]

ACTUAL JUNIOR AND SENIOR KINDERGARTEN ENROLLMENT AND PERCENTAGES OF RELEVANT AGE GROUPS IN PUBLICLY SUPPORTED SCHOOLS IN ONTARIO, 1968-74

Year	Jr. Kindergarten Enrollment[1]	Jr. K. as a % of 4 year old population[2]	Sr. Kindergarten Enrollment[1]	Sr. K. as a % of 5 year old population[2]
1968	5020	3.3	141784	90.4
1969	7666	5.1	150669	97.2
1970	12689	8.6	141776	92.2
1971	17543	13.1	131605	91.6
1972	31907	25.3	126012	93.5
1973	38038	30.2	124029	97.7
1974	42284	32.3	128157	101.2

Sources: 1. Annual reports of the Minister of Education, Ontario.
2. For the years 1968-70: Interpolated population estimates between census years.
For the year 1971: Statistics Canada, Census of Canada, 1971.
For the years 1972-74: Ontario Ministry of Treasury, Economics and Intergovernmental Affairs, Economic Analysis Branch, Population Projection, November 1973.

*Research officer, the Department of Educational Planning, OISE. The author wishes to pay tribute to the cooperation and hospitality of the International Union for Child Welfare and the Committee of Soviet Women. She also acknowledges the assistance and criticism of Mr. Michael Skolnik, former professor of the department, in the conduct of the research project of which this trip to the Soviet Union was a small part.

Ontario educational planners, therefore, have two bases for their interest in the Soviet Union's experience in the pre-school field: day care and the extension of pre-school education are burning policy topics in the province; and too little is known anyway about Soviet planning policies and techniques. Therefore in April 1973, the Department of Educational Planning subsidized our participation in a three-week study tour of preschool institutions in Moscow, Leningrad, and Kiev.* This paper is a report of impressions gained from the tour.

Educational planning

Not only the pre-school care of children is planned in the USSR, of course. Since its inception this nation has been committed to planning, and centralized planning is the main feature of Soviet economic policy. It is important to remember, therefore, that planning for education is but a sector of overall economic planning. We shall begin with a brief description of their mechanisms of educational planning.[7] The only political party of the country is the Communist Party. It is the Party Congress which establishes and maintains policy covering all matters of the nation's business. Decisions of the Congress are binding upon all party organizations in all republics of the Union. In the field of education, as in every other sphere, decisions of Congress are channelled through the Supreme Soviet down to regional and local party organizations. The Supreme Soviet consists of two "representative" legislative bodies, the Soviet of the Union and the Soviet of Nationalities. In 1971 of the 14.5 million Party members, over 16% worked in education, science, and health and culture. The government administers the educational system in a centralized manner as to policy, but allows for diversity in implementation through the ministries of education of the individual republics. The supreme executive and administrative authority in education is the Council of Ministers of the USSR. It also delegates implementation (and the drafting of regulations) to the Councils of Ministers of the various republics. The Councils which are actually responsible for the provision of educational services work through ministries of education. Although parents, trade unions and state organizations contribute to the budget for education, the primary financial sources are the state budgets at the union, republic and local levels.

Proposals affecting general, vocational, secondary, specialised and higher education may be prepared by individual educational establishments, government departments, ministries, party, trade union or Komsomol organizations on the basis of the general objectives set out by the USSR State Planning Commission (*Gosplan*). The objectives are formulated in quantitative terms by *Gosplan* on the basis of the program of the CPSU, the directives of the party's Central Committee, and decisions of the Council of Ministers. Then with the assistance and participation of the republics of the union, their ministries and their departments, *Gosplan's* divisions draft long-term development plans and annual implementation plans for all branches of governments – including education.

*This was an organized official tour so the members were enabled to meet Soviet officials, scholars, teachers, parents and children, who gave generously of their time to facilitate our understanding of the Soviet preschool system. The tour was organized by the International Union for Child Welfare (Geneva) in cooperation with the Committee of Soviet Women (Moscow). The 102 participants were received by representatives of the Academy of Educational Sciences in Moscow, The Bechterov Institute in Leningrad, and the Scientific Research Institute of Pedagogical Sciences in Kiev. Discussions were held with members of the Scientific Research Institute of Defectology (Moscow), and the Research Institute for Preschool Education (Moscow). There were numerous visits to nurseries and kindergartens, maternal and child welfare agencies, children's health settlements, and Young Pioneer organizations.

The *Gosplan* Division of Culture and Education then provides for discussion of the draft plans in the *Gosplans* of the different republics as well as the central USSR *Gosplan* itself. Directly involved in the plan review are the officials of all educational ministries and departments, e.g., the USSR Ministries of Education, of Higher Education, and of Secondary Specialised Education, the corresponding ministries and committees at the republic level, the State Committee for Vocational-Technical Education, all ministries using or covering different kinds of skilled worker, the USSR Ministry of Finance, the State Committee of the Council of Ministers of the USSR on Labour and Wages, the Academy of Sciences of the USSR and a long list of other agencies.

The *Gosplan* Division of Culture and Education consists of subdivisions devoted to culture and three devoted to education: (1) education, i.e., planning for all types of schools of general education and for pre-school establishments; (2) training and re-assignment of specialists, i.e., planning for higher and secondary specialised education; and (3) labour, productivity, wages and labour resources, i.e., planning the training of skilled workers in the vocational-technical schools.

The Division analyses the detailed draft program plans which have been submitted to all agencies, reviewing them both from the point of view of technical feasibility and economic validity, and then prepares final general plans (within the agreed policy framework) for the country as a whole and for each republic and ministry involved.

In order to understand and appreciate the development of day care in the Soviet Union we need to know not only that its government views the development of all aspects of life and the production of goods and services within some comprehensive national long term plan, but also that it is a society with specific and defined policies *vis à vis* the emancipation of women, the role of education and the roles and proper conditioning of children.

Working women

Acceptance of the group upbringing and care of infants and little children is highly correlated with the work roles of women, particularly with their active involvement in paid work outside the family home. In the USSR, the labour participation rate of urban women (10 years of age and over) grew from 40.1% in 1926 to 67.0% in 1959.[8] In Canada the rates (for women 14 years and over) have always been much lower—22.9% in 1941, 29.3% in 1961.[9] However, it is not only the number of women (particularly married mothers) in the wage-paid labour force which affects the demand for child care services but also their life styles, their expectations and career plans, educational opportunities, the scarcity of domestic help, and the existence of such reform agitation as women's liberation movements. All these have contributed to the weakening of the traditional notion that the place for both women and young children is in the home.

All the influences listed, except the women's liberation movements, apply as much to the Soviet Union as to the West in shaping official attitudes to the provision of day care. A women's liberation movement is unthinkable in a Communist society. From its inception the USSR has claimed that it has "the most progressive female labour and other legislation in the world".[10] Such a claim, of course, accords with Marx's paraphrase of the classic credo of Fourier and Engels: "Anybody who knows anything of history knows that the great social changes are impossible without the feminine ferment. Social progress can be measured exactly by the social position of the fair sex (the ugly ones included)".[11]

In 1919, Lenin had already equated the goals of the USSR with the emancipation of women, so that, in theory at least, a latter-day liberation movement is unnecessary:

> Notwithstanding all laws emancipating women, she continues to be a *domestic slave* because petty housework crushes, strangles, stultifies, and degrades her, chains her to the kitchen and the nursery and she wastes her labour on barbarously unproductive, petty, nerve-racking, stultifying and crushing drudgery. The real emancipation of women, real communism, will begin only where and when an all-out struggle begins (led by the proletariat wielding state power) against the petty housekeeping, or rather when its wholesale transformation into a large socialist economy begins.[12]

What Lenin said (more eloquently than Germaine Greer) was that in the classless society one sex would no more exploit the other than one class the other; and offices, factories and farms would replace kitchens and nurseries as the natural habitat of women. This identification of the struggle of women with the class struggle has been rejected by most radical feminists in the West. But this is ignored in the Soviet Union. Their claim that Soviet womanhood has been fully emancipated is loudly propagated by the state and tacitly endorsed by the society.

At first glance the claim seems justified. Fifty years of a Communist state has eliminated such obstacles to equality as inequality of wages. In the Soviet Union women doing the same job as men receive the same pay. And the destruction of religious beliefs and social attitudes which accompanied the Revolution opened for them the doors to all types of schooling and careers. They are not equally represented in all careers and all levels of authority. So it is not true, for example, that the average wage for the entire female labour force would be comparable to that for the entire male. However, it is claimed that 70% of the able-bodied women hold jobs on an equal financial footing with men.[13] The absence of any new legislation requiring equal pay for equal work in the amendments to the Labour Code of October 30, 1922[14] suggests that there is simply no need for it. Soviet and non-Soviet observers alike agree that non-discriminatory pay rates are the established practice in the USSR.[15]

From the Revolution onward it has been official policy to encourage married women to work, but provide for their protection when they become pregnant. A decree of March 26, 1956 merely extended a common benefit when it provided mandatory paid maternity leave of 122 days, with the provision of two extra weeks in the event of multiple or abnormal delivery. The working mother also has the option of adding her vacation leave to her time of absence, or taking unpaid leave for periods up to one year.[16] Other important maternity benefits are the assurance of return to the same or an equivalent job without loss of pay or status, and the provision for nursing time at work (half an hour every three hours, even for mothers whose babies are bottle-fed).

But although they have made great progress in eliminating sex discrimination from educational and employment opportunities, the Soviets have not succeeded in liberating women from their traditional duties of wife and mother. The result is that they may well have become the hardest working women in the world. In addition to an average 40-hour work week outside the home, they perform all the housewifery duties performed by women in the west, and they cope with a strictly Soviet phenomenon: queues. Because of the perennial lack of consumer goods and services, queues can take as much as 20 hours

per week; they are a regular part of the average Soviet woman's day. Indeed the estimate of an *average* loss of 10 hours per week is a conservative one. Added to this loss are hours spent at regular political or adult education meetings in the place of work and so-called volunteer overtime (another feature of communist labour).

Francois LaCasse has estimated that a non-employed Canadian mother with children under the age of 6 spends about 35 hours per week on housework and the care of children and husband.[17] An employed woman with young children (and a husband) might spend about 18 hours per week on domestic duties. The single parent would spend more. If we add this estimated figure to the common minimum work week in Canada (37.5 hours) the total is about 55½ hours work per week, as a minimum.

Unfortunately survey data on the out-of-paid-work activity of Soviet women are not readily available, and to apply Canadian estimates to their conditions is to grossly *underestimate* the time involved because they lack the electircal time-saving gadgets and convenience foods which are part of the Canadian lifestyle. But using these figures and then adding the time spent in queues, meetings and overtime work would give the average working woman a *de facto* work week of something like 78 hours. Consequently, her victory in the battle of emancipation appears to be phyrrhic: the burden of family responsibilities remains unchanged; equality in work has not eliminated inequality in life; and it is hardly surprising that widespread group child care services have had to be created. But they must be regarded primarily as an adjunct to production, not as an adjunct to female emancipation. As Myra Wolfgang put succinctly: "Russian woman likes the job market the way it is, but she would like to see the liberation of her sex extended into the home as well. I believe that she would not mind bringing home the bacon so much if she did not also have to cook it".[18]

Attitudes toward day care and preschool education are inextricably bound up with social attitudes toward women. Such western countries as Canada generally offer preschool care as a welfare measure because the mother is considered "enslaved" if she has to take employment outside her home. When she does this she, the principal daily guardian of the child, must delegate the care of the child to another member of the family, to paid help or to a formal preschool institution. In the USSR a woman is considered enslaved if she must stay home and perform the "nerve-racking" and "unproductive" labour connected with taking care of a household, husband and children. An idealized being in the West, the full-time housewife and mother, is looked upon in the USSR as a social parasite.[19] Communist ethic does not consider the bearing and raising of children and the care of a home as sufficient contributions to society. The Canadian mother of small children may feel guilty and apologetic if she works full-time for wages. The Soviet woman may feel guilty and apologetic if she does not do so. The social mores of the west impose a subtle social stigma on the working mother of the young child; Soviet social mores directs the wrath to the unemployed, mothers included.

If woman's place is considered to be in the home, day care service is offered to her as a social handout; if woman's place is considered to be in the labour force, day care service is offered to her as a civic right, part of her conditions of work. In the West, day care is generally placed within the area of welfare services; in the USSR, day care is generally placed in the context of social utilities. Western policy has been to provide service for "those who need it"; the Soviets acknowledge universal need and concentrate only on problems of resources.

Nevertheless both types of society engage in a continuous struggle to provide services adequately within the framework of their political systems and social attitudes. In both, the pressure for programmed day care on a national scale is considerable. In principle all Soviet children who need day care shall have it. But the *willingness* implicit in the policy is far from reality. It is a paradox that the USSR which glorifies women's work, and which has established a national network of day care institutions, now has approximately the same percentage (about 20%)* of preschool children in such centres as the United States, the country that still holds as its ideal the mother caring for her own children, full-time, in her own home.

The preschool child

Society's interest in the young child shapes the degree of state involvement with preschool services, as much as its attitude to women's roles. Is appropriate care a welfare measure or a social right? Is this an important educational service necessary for the future of the nation, or a babysitting effort? Should it be subsidized as little as possible, providing a level and type of care which would be acceptable only to the lowest levels of the society, should it provide little children with communal living of a basic "average" lifestyle, or is "nothing but the best" acceptable – comparable to the best care in the best type of home, with the best of all possible mothers?

According to William Fowler: "Infancy is the most malleable, rapidly changing, and least organized period of human development. Never again will there be the same potential for establishing basic norms of understanding, style and feeling in all domains of experience. Early experience is the primary matrix from which all later development is generated".[20] Yet on this continent public interest (particularly public *educational* interest) in the first few years of a child's life is a recent phenomenon.[21] In 1970 in his article, "From the President", Ralph Witherson reported the current concern for children under the age of six years as follows:

> The education of today's young child has currently captured the concern and interest of federal government, the press, the educators, parents, and a multitude of agencies concerned with the welfare of children and their families. Historically, the education of young children has been of little concern in the U.S. When the history of education in the U.S. during the 1960s is written, the young child will play an important role for the first time.[22]

This statement is echoed in the Canadian report of the National Study on Day Care, this country's first comprehensive survey of needs. The image emerged of a preschooler commanding great attention of educational and political authorities for the first time and yet remaining socially neglected, the demand for care far exceeding the supply.

As will be shown later, this appears also to be the case in the Soviet Union. But here we are talking not so much about the actual provision of programs and facilities as the policy of their provision *in principle.* As recently as 1970 it was officially admitted that in the U.S. the young child does not have a right to adequate day care service as a basic citizen's right.[23] The Soviet official view is that such services are a child's birthright.

*This is the figure for public centres; there are no private ones in the USSR. Although they exist in the West, data on them are not reliable and they have had little influence on public policy or public standards. Their inclusion, however, would push the U.S. level of service above that of the USSR.

Moreover, it acknowledges the young child as a member of the only privileged class within communist social structure, the class of preschool children.

Working on the premise that before the Revolution the majority of children "were deprived of childhood",[24] the Soviet regime has tried to remedy the situation by placing children at the centre of national attention. A potential "New Man" destined to follow in the footsteps of Gorky's Nil,[25] a child is, in the words of N.K. Krupskaya, "the person, the juvenile, whom we can train into a conscientious collectivist...beginning with nursery".[26] To this end, a complex state machinery was put in motion redefining the standard components of the child's world: schools, teachers, pedagogy. "The Soviet school has always been the instrument for bringing up conscious builders of a new world, [for it has to rear generations] capable of definitely establishing communism".[27] The teachers are "the main army of socialist enlightenment ... linking teaching with the task of organizing a socialist society".[28] "Pedagogy is the science of the communist upbringing of man."[29]

In theory and practice, the Soviet school has ceased to be solely a place of instruction. It has become a place for the upbringing of new generations, part of the state, one of its social utilities. Its principal goal is the production of future fighters for communism; and since this is so, the Soviet school indoctrinates children, from the nursery on, with the ideals endorsed by its governing ideology. The easiest way for the Soviets to judge the success of a given school is to establish to what extent it has succeeded in preparing children for their task of building the communist future. Or, as M.I. Kalinin bluntly put it in 1940: "Education is the definite, purposeful and systematic influencing of the mind of the person being educated in order to imbue him with the qualities desired by the educator".[30] In the Soviet Union preschool care is synonymous with preschool education; it often begins as early as two months of age.

Figures given in a 1970 speech of the USSR Minister of Education testify to the willingness of Soviet governments to make theirs a child-centred society – they then employed 2,595,000 school-, nursery- and kindergarten-teachers in 67,000 pre-school institutions.[31] Allowing for the inevitable gap between what the Soviet state professes to do and what it actually does, its preoccupation with the young child shows the goals which lobby groups were urging upon the U.S. Congress in 1970 have been the condition in the USSR for some 50 years: the education of the young child is central to the educational, social, political and economic goals of the society.

As late as 1971, enlightened American educators were pleading for a national policy which would remove the welfare stigma from the recipients of day care services. The motion was put to the Committee on Finance of the 92nd Congress that quality day care service be defined as a right of (a) every child, (b) every parent and (c) every community.[32] Similarly, recent Ontario[33] studies deplore the Ontario Day Nurseries Act (1966) which labours under the handicap that it seems to have been created *only* for mothers and children burdened by financial, psychological or social pathology. These studies endorse the thought (still "innovative" in the West) that quality day care service should be a public utility used by all.[34]

The Soviet authorities adopted this position with their first efforts to establish a national network on day care. Guided by the conviction that children in preschool institutions "are offered better opportunity for their development than at home",[35] they early eroded the boundary between babysitting and education, making day care centres what Lenin declared they ought to be – "the seedbeds of communism".

Within the Russian application of Marxism, the child (a "New Man" in the making) represents the nation and is symbolic of the nation's power in its embryonic stage. As such he commands, and in theory receives, the State's best efforts for the satisfaction of his physical, psychological and social needs. This illustrates another fundamental difference between the Western and Soviet view of children. In the West, the child is seen first and foremost as a person, an individual; in the USSR the child is seen as a symbol of all the nation's individuals combined, the state. Honoured and pampered, in words and frequently in fact, the child looms prominently on the Soviet social scene. The Soviet state assumes the role of the preschool child's principal guardian, with its mother's care appearing as a service which might be delegated to her by the state (but as often as not the conditions for such delegation are simply lacking—she does not havethe choice). To overstate the case, the Soviet state provides day care to indoctrinate and educate its young child with enthusiasm; Western governments reluctantly babysit if the mother has to work.

A nation obsessed

One other ingredient is necessary in order to put an understanding of Soviet preschool policy into the proper perspective. This is a nation with a seemingly limitless faith in the value of education and of its ability, through education, to improve itself, to catch up and surpass the other nations of the world (particularly the United States). It is not an exaggeration to say that, since the Revolution, the USSR has been obsessed with education.

The picture given its own people (and fervently believed) is of a pre-revolutionary Russia in which a handful of people ruled over millions of illiterates.[36] The words of school principal, Ivan Novikov, express the attitude of all the adults and children with whom we talked on our tour:

> Children like to read about the lives of children before the Revolution, and nearly always they draw comparisons between past and present, stressing that this is how *it used to be* and that *it cannot be like that now.*[37] (our italics)

The future, seen in terms of the global victory of communism, inspires Soviet citizens with visions of how good things will be when the USSR, armed with superior scholastic achievement, will lead the rest of the world. The present with all its irksome lack of comfort is still infinitely better than the past, and is considered to be only slightly inferior to the future. This is a transitory stage, and education acts as the catalyst to bring about a better future. Appreciation of meaning and purpose in life, acquired through education, is one of the first features of Soviet life observed by the western traveller. It is especially noticeable in children and adolsecents—in sharp contrast to what we find at home. It is, of course, a purpose uniformly held, with no openly stated opposing view—which is also in sharp contrast to what we find at home.

In the USSR education is almost the only means of upward social mobility. And the educational level of the nation is viewed as the main accelerator towards the ideological and political supremacy of the Soviet people. Therefore, those who pay for, as well as those who operate and attend, schools and universities accord to them a respect which probably never has existed in the West, certainly which is unthinkable today. To the average Soviet citizen, all centres of learning (from creches to graduate institutes) are sacred launching pads for his own and his country's advancement. A little girl of five in a Moscow kindergarten summed it up for us: "We have to go to school, you know, so that our Motherland becomes the strongest in the world".

The system

Nurseries

There are two basic types of preschool institution in the USSR: *Yasly* (creche-nursery) for children aged from 2 months to 3 years, and *detsky sad* (kindergarten) for the 3 to 7 year age group. Both operate as part-day, full-day, or boarding institutions and on either a permanent or a seasonal basis. A Canadian visitor accustomed to our isolated nursery centres is particularly struck by the *Kombinat.* This is a building which combines nursery and kindergarten, on the premises of an elementary and a high school. The intention of the planners is to ensure continuity of programs and, even more, continuity of social interaction between the little children and older children and adults. Since Soviet citizens live at the same address for decades, it is not difficult to see the value of permanent physical surroundings and a staff that takes care of, and educates, the child from birth to university entrance.

As we have already said, the USSR does not in fact provide universal preschool care and education. This is still an ideal rather than a reality. The Grandmother is still the most important purveyor of child-care. But its level of service is impressive. Prior to the Revolution, a negligible number of children were cared for in communal facilities. In 1921 some permanent centres were established but the significant increase in numbers took place between 1929 and 1932. By 1940 there were 800,000 places in permanent nurseries and about 4 million in seasonal facilities. De Witt estimates that at that time less than 5% of the children 0 to 3 years old were accommodated in permanent institutions, and about 28% were served in seasonal facilities.[38] It is estimated that the proportion served in permanent facilities had reached 10% by the 1960s.[39]

The distribution of nursery facilities varies greatly among the republics and between rural and urban areas. Dodge estimates that in 1926 the rural population outnumbered the urban by more than four to one, yet in 1929 almost eight times as many urban as rural places were available in permanent nurseries. By 1937, the numbers of places had become almost equal, but the rural population was still almost twice as large as the urban. In recent years urban nurseries are estimated to have twice the number of places of rural institutions.[40]

In the USSR there is no free market for day care services. The state not only controls the supply of services but also influences demand through its control of quality and cost. Organizations such as factories and *kolkhozes* are encouraged to establish day care services with their own funds. The state organizations that establish preschool services may finance their building and maintenance, but the Ministries of Education and Health supervise their curricula, and control their staff qualifications and staff/children ratios through inspectors from local governmental departments.

While primary, secondary, and higher education are free, preschool services are not. A sliding scale is used to assess the parental contribution to costs. Fees appear to vary from one institution to another. A nursery we visited in Moscow charged 12 rubles per month for the care of an infant during the day (10 hours per day, 6 days a week). In Leningrad, a widowed mother paid 8 rubles per month for full-time care of her 6 year old son. A kindergarten boarding school in Kiev charged 20 rubles per month per child. Directors of all the institutions visited confirmed that the care of children whose parents cannot afford to pay is subsidized by the trade union committees at the parents' place of work. Fees are based on income not just the parents' wages. War pensions, alimony, single mother's

allowance and the allowance for mothers of large families are all included. Some notion of the value of the fees cited above may be obtained by comparison to typical salaries and other costs: The year of the tour (1973) a kindergarten teacher earned 130 rubles per month, a cook 80, a director 180. An engineer we visited in Moscow earned 240 per month and was paying 40 rubles per month for his two-bedroom apartment. A professor or researcher at the Ph.D. level might well earn about 400 rubles per month.

Kindergartens

Kindergarten is considered the first level of the educational system in the Soviet Union. Like nurseries, publicly supported kindergartens were practically non-existent before the Revolution. In 1927 there were some 127,000 children enrolled in kindergarten. By 1932 the total had grown tenfold. A large expansion of the system took place in 1962 to provide approximately 4 million places, and further development occurred in the 1960s and 1970s with the target being the creation of 8 million places. How well do these targets meet the need for facilities? In 1962 there were an estimated 19.3 million children in the age group 3-7; kindergarten enrolment at that time was 3,790,000 (i.e., less than 20%). Due to the uneven distribution of facilities in urban and rural areas, it is estimated that, in the current decade, 37% of urban but only 7% of rural children can be accommodated in kindergarten.[41]

Most *Kombinats* operate on a 24-hour basis. Parents leave children at the nursery on their way to work (as early as 6 a.m. and for 8, 10, or 12 hours depending on their working shifts). When necessary, they leave the children overnight. Many of the *Kombinats* which we visited had up to 20% of their children on a permanent boarder basis. The usual enrollment of a *Kombinat* is between 250 and 450. The prescribed staff ratios in nurseries is 1:4, in Kindergarten 1:8. In the centres that we visited, it was evident that these ratios were maintained.

The expansion of boarding kindergarten and school facilities in the last fifteen years has been achieved primarily through conversion of former children's homes and orphanages. In fact, the simplistic translation that the westerner makes is that kindergarten-boarding schools are orphanages, i.e., institutions which take children who have no parents, those having a poor home environment, handicapped children, etc. The term "orphanage" is shunned in the USSR. It is not considered compatible with the image of state as "father" to all.

Socializing through groups

In 1959, the 22nd Congress of the Communist Party of the Soviet Union tried to make an end to the trial and error policies and practices which had grown up with the preschool educational system. It prepared an administrative blue print applicable to all preschool institutions in the USSR, and the Central Committee and Council of Ministers adopted a resolution "Concerning Measures for the Further Development of the Institutions for Preschool Children and the Improvement of Education and Medical Services of Preschool Age". As a result the Academy of Pedagogical Sciences of the Russian Republic and the Academy of Medical Sciences of the Soviet Union were commissioned to create combined preschool institutions which would take care of infants from the age of two months and older preschool children as well, and work out a unified program for them. There resulted an expansion and improvement of the older forms of communal service for

children and the massive *Programme of Instruction* (1962)—a manual which prescribes, literally, for every hour of the child's upbringing in all preschool institutions, in all republics of the Soviet Union.

Thus, following the early post-revolution experimentation in form and content of institutions taking care of children almost from birth to the age of 7, there emerged what Bronfenbrenner has called "the most extensive programme of group upbringing in human history".

The ultimate aim of Soviet educational planning is the overall *vospitanie* (upbringing) of a child within the norms and values of communist morality. The term is different from *obrazovanie*(education). In Soviet terminology upbringing is that part of education which focuses on character building. Both parents and educators appear willing to put the onus of this task on the school.

The child's upbringing in nurseries and kindergartens begins with the systematic development of such virtues as altruism, self-discipline, love of parents, love of one's country, respect for elders, respect for common property and "proper" conduct. Since the child's upbringing is geared toward developing the attributes of good citizenship, and these are as specified as the goals of the child's academic education, Soviet educational planning emerges as an impressive interdisciplinary effort. The use of children's groups for the child's socialization is perhaps its most distinctive feature. Intricately woven into the child's life at school and in the community, these groups become effective agents in transmitting the norms and values of adult society and are its instrument of reward and punishment. The positive influence that such groups play in the upbringing of children merits a second look by western observers.[42]

The structure of *shevstvo* best illustrates the functioning of children's collectives as monitors in the character building process. The term can be translated as a condition of having someone under one's protection and supervision. Applied to school and preschool institutions, *shevstvo* is a form of "adoption" by a group of children older than the group being patronized. For example, a group of 5-year olds may adopt a nursery unit of 2-year olds. The kindergarten children visit the nursery children regularly to play with them, show them new toys, and help the careworkers in simple nurturing tasks. One-to-one relationships are encouraged and are transferred from school to the community where the children live. Or, a Grade 2 group (often a whole class) will patronize a group of children in the kindergarten. And they, in turn, may be patronized by a high school group. Older children act as leaders on joint outings; they initiate tutoring for pupils who need it; organize visits to sick friends, and generally act as rather responsible older brothers and sisters. Since the individual child's behaviour is constantly evaluated and commented upon by his closest peer groups, concern for an individual's ethical conduct and achievement in school is the core of these relationships. The good reputation of the group depends upon the good reputation of its individual members.

An important factor in *shevstvo* is that children themselves take the corrective measures when the deviance from the norms (of adults) occurs. Only if the authority of the children's collective fails, is the authority of teachers or parents invoked. Since parents' participation in schools and teachers' participation in the community are practised on a broad scale, children's groups provide the social and psychological continuity of interaction among themselves and with the adults. This accounts for the feeling of security and satisfaction visible in the Soviet setting.

The formal organizations of children practice *shevstvo* with the same intent as the informal groups. In this way, interaction between children is further monitored by the *Oktyabrists* (grades 1-3, ages 7-9), *Pioneers* (grades 4-8, ages 10-15) and *Komsomol* (Young Communist League to which an individual may belong until the age of 28).

The concept of closely knit children's groups as instruments in moral upbringing is rooted in the teaching of the Soviet pioneer pedagogue, Anton S. Makarenko.[43] Perhaps the most quoted source in educational matters to this day, Makarenko's thought transmits the legacy of the 1930s, that the Soviet state contains no contradictions between the individual and society. (Of course students of Soviet history of the 30s would also point out that Soviet society *brooks* no definition of contradiction between the individual and the state, and in becoming the victim of such conflict the individual of one group *de facto* becomes the victim of the individuals of another group.) In Makarenko's view groups, combining individual and collective work, are the basic social structures facilitating the development of collective consciousness of the interdependence and unity of an individual and society. The long standing notion of the Soviets, that schools and preschool institutions must reflect life and human values outside their walls, is still the moving force behind their educational activities. Soviet institutions do indeed provide a realistic link between the experiences of learning and the experiences of life. This was very much in evidence during our tour.

While the segregation of age groups and the increasing alienation, delinquency and violence of youth have become typical negative features of North American culture, lack of segregation among children and between youth and adults characterize Soviet social structure, and are consciously maintained in all aspects of the educational system beginning with nurseries.

> There is evidence ... that the peer group has quite different effects in the Soviet Union and in the United States. In the former, it operates to reinforce adult-approved patterns of conduct, whereas, in our country, it intensifies anti-social tendencies.[44]

Bronfenbrenner and other students[45] of Soviet preschool education unanimously agree: Soviets instill in their children the norms and values of the majority of the adult society more effectively than we do. There remains the question, of course, of whether this group socialization can only be successful when the norms to be affirmed are group norms which rate conformity high and individualism low – which regard obedience to the state and the group as highly desirable, sufficiently so to approve any and all types of pressure to suppress differences. What must be kept in mind is that it is the same group responsibility which enables the older sister to rebuke the younger one for snatching the baby's candy as that which enables the apartment superintendent to report to the municipal offices *routinely* the visitors of the tenants in his block, without any sense of shame, without any feeling of violating the privacy or threatening the safety of neighbours, but as a normal task, part of the job. There are those, of course, who are convinced that such group socialization is compatible with western liberal philosophy. Fowler's work,[46] for example, suggests that we can raise future generations, by group upbringing, within the framework of our own norms and values if we begin with the notions that (a) day care is synonymous with education, and (b) it is the birthright of every child. He implies that publicly subsidized nurseries deserve top priority in the nation's educational planning and educational expenditures. This is a notion shared by many scholars[47] and the progressive public at large.

Before expressing his grave concern for "the unmaking of the American child" due to an inadequate early socialization, Bronfenbrenner gives his last comment on Soviet children:

> Soviet children of the future will continue to be more conforming than our own. But this also means that they will be less anti-adult, rebellious, aggressive and delinquent. During our family sojourns in the USSR, we learned to our surprise and pleasure that the streets of Moscow and other Soviet cities were reasonably safe for women and children, by night as well as by day. They say New York was that way once.[48]

Bronfenbrenner brims with enthusiasm for the socializing features of Soviet planning for early childhood education. Is he justified? In a discussion of Soviet life always there is the uncomfortable feeling that one cannot be right. Or, to paraphrase Raymond Bauer, one is always wrong with various degrees of vulnerability.[49]

Nowhere, it seems, are subjective judgements greater than in the assessment of the products of Soviet education: schools and children. The contradictory views are particularly striking between various academic disciplines. The psychologist Bronfenbrenner speaks with approval of Soviet preschool institutions. De Witt, the economist, dealing with Soviet professional manpower, describes the Soviet seasonal nurseries in 1961 as often being "nothing more than a pile of hay and a few blankets under a shady tree".[50] Neither is necessarily wrong. They may well have been shown different samples. They obviously saw what they were seeking.

Between these extreme views stands Tomiak's puzzling assertion that (in 1972) "there is no set programme for the nurseries" in the Soviet Union.[51] That this author failed to notice the monumental reorganization of the Soviet preschool system which took place in the past decade, which placed special emphasis on nursery programs as we have described, illustrates the ignorance of western observers of the Soviet world. The policy of universal care for infants from 2 months to 3 years of age is one of the most striking features of recent Soviet educational planning. It builds on the developments of 50 years. It is also an area of educational development particularly neglected on this continent until very recently. A cursory look at North American legislation (or lack of it) concerning infant care illustrates this point. With the exception of Texas, Virginia, and New York (which have licensed infant care since 1921, 1922 or 1940) the states of the U.S. began licensing infant care only in the late 1960s. In Canada, only half the provinces provide for licensing: Alberta, Nova Scotia, Ontario, Quebec, and Saskatchewan. Between the first (Alberta, 1947) and the second instance of licensing (Quebec, 1964) nearly twenty years elapsed.[52] And licensing, of course, does not mean the provision of services. In Ontario, infant care subsidized by the provincial government has been virtually non-existent. Only a few nurseries are funded or partially funded by municipalities. Nor does the Ontario government leave any question regarding its attitude to day care. The Hon. Margaret Birch, Provincial Secretary for Social Development, was explicit in her *Statement to Legislature Announcing Day Care Services for Children* of June 4, 1974: "We will not establish a system of 'free' universal day care in Ontario".[53]

Conclusion

To conclude this paper of impressions of the salient features that characterize Soviet *official* attitude on day care, we shall list those we might well study before we plan the extension of our service:

(1) In the Soviet state the right to day care services is part of the state's acknowledgement of the emancipation of women.

(2) In the Soviet state the preschool child is regarded as a most important human resource, one with a birthright to day care.

(3) Universal day care is not an accomplished fact, but it is an ideal toward which the government strives. In fact a comparable level of service has been accomplished in the United States from mere expediency, through little government effort and conscious direction. It is unquestionably true that small efforts at coordination, control and direction—in other words some planning—could greatly improve the type and availability of service in the U.S.

(4) The services which exist in the USSR appear to be successful in bringing up children in accordance with the expectation of the community as expressed by the doctrines of the Communist Party.

(5) Preschool institutions aim for, and seem to achieve to a great degree, continuity of experience between the home, the school and the community.

(6) Since preschool child care is equated with preschool education, the provision of day care services falls into the area of educational planning rather than welfare planning for alleviation of financial, psychological or social pathology.

(7) Preschool institutions in the Soviet Union *are* the seedbeds of communism. They are the successful platform from which "New Man" is launched toward adult life.

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A CONCEPTUAL FRAMEWORK FOR THE ANALYSIS OF THE NATIONAL PLANNING PROCESS FOR EDUCATIONAL DEVELOPMENT

There are three main questions to be answered when analysing the planning process for educational development at the national level: (1) what are the political and administrative conditions required for national educational planning? (2) What activities can be subsumed under the rubric of planning the national educational development? (3) What is the relationship between the planned goals and the educational change and growth which must occur? To investigate these questions a conceptual framework is required, based on the concepts "planning process" and "educational development". This paper attempts to develop such a framework – one which will be appropriate for analyzing political-administrative conditions, national planning activities and educational change in a related context.

Concepts of the planning process

In an increasingly complex and rapidly changing society, planning has become "more valuable, even essential, as a tool for man to cope with the multiple societal and geographical transformations of tomorrow, and the future beyond".[1] However, planning, even educational planning, and the process of planning, have been defined in a number of different ways for different purposes. The definitions may be said to fall into the following types: those which view the activity as part of a problem-solving process, part of an administrative process, or part of a development strategy. We shall briefly review the essential elements of such definitions.

Friedman contends that planning is principally "a way of thinking and of arriving at a decision; it is not a particular set of conclusions".[2] Newman describes it as the process of clarifying the problem, determining the alternatives, getting the facts, analyzing the facts, and deciding on action.[3] Hansen sees it as a process involving six steps: identification of the problem, diagnosis of the problem situation, clarification of the diagnostic findings, search for solutions, mobilizing for change, and making the actual change decisions.[4] With such sequential procedures planning becomes no more than a variant of the normative problem-solving methodologies (the thinking process) illustrated by Dewey[5] or the decision-making process described by Griffiths.[6]

The study of business planning has a long history and a number of definitions of planning as administrative process appear in its literature. Fayol, in one of the earliest efforts to define the science of management, discussed the importance of planning, viewing it as "the process of assessing the future and making provisions for it".[7] Mockler singled out more than thirty studies on different aspects of business planning which have appeared since 1958, commenting that they explored planning theory and developed the conceptual framework on which a science of corporate planning could be built.[8] In a

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typical contribution, LeBreton and Henning[9] outline theories of need determination, choice, data collection and processing, testing, organizing, communication, and persuasion which are part of the process of planning.

The importance of planning in the management of business has been so accepted that it has been placed in the first or second phase of the administrative process as depicted in much of the writing on business management, public administration and educational administration.[10] It is viewed as purposeful preparation for a decision which will serve as the basis for subsequent action. Considered thus as one aspect of executive action, it may be considered an "intellectual process involving varying degrees of creative thinking and imaginative manipulation of many variables".[11]

Planning has been also defined as part of the usual administrative role of setting goals and targets—as a scheme of goal/means. Morphet and Ryan refer to the "process of attempting to determine appropriate goals and objectives, and obtaining pertinent information and agreement on steps and procedures that are designed to meet these needs so the objectives can be obtained".[12] Donnelly and his associates see planning as the "fundamental and primary activity which includes all the managerial activities leading to the definition of goals and the determination of appropriate means to achieve these goals".[13] Philip Coombs seems to place as much stress on the "means" (particularly the direction and pace) as the goal setting. For him planning is a "continuous process, concerned not only with where to go but how to get there and by what best route".[14]

Different writers stress different aspects of the goal/means. For some it is the *integration* of decision and implementation which is important. Colm emphasizes that planning is a system of decision-making more than merely the preparation of a plan.[15] The Dror definition, which has become so widely accepted, views it as "the process of preparing a set of decisions for action in the future, directed at achieving goals by optimal means".[16]

Anderson and Bowman do not include the optimization provision. They define educational planning as "the process of preparing a set of decisions for future action pertaining to education".[17] They distinguish the planning from the approval or implementation of plans. And they do not necessarily link educational planning with planning in such related areas as economic and social policy.

Wheeler lists five main activities which the planning process commonly involves: the issue of directives for planning; the preparation of plans; their approval; their implementation; and their evaluation and revision.[18] Chesswas' list of activities seems to suggest that particularly the first two above are an interactive-reiterative process. His list of activities includes the analysis and appraisal of statistical data; formulation of policy proposals; preparation of projections, programming and detailed allocation of resources; costing and feasibility testing of the alternatives; decision-making and implementation; evaluation and revision.[19] The UNESCO list of planning activities shows considerable agreement with those submitted by the authors from the International Institute of Educational Planning. It includes the clarification of educational objectives; diagnosis of present conditions and recent trends; assessment of alternatives; translation of plans into action; evaluation and adjustment.[20]

Planning, not only educational planning but planning for any public service, or for economic and social development, is also defined as an element in development strategy. Such a concept views the planning process as one of the tools for national development.

While it seeks "to prepare for the future; it [planning] can also serve as an instrument to change it".[21]

Such a concept of planning defines its prime role as bringing about change. *Ipso facto,* if there is no need to contemplate change there is no need to plan. Friedman seems to emphasize planning as "guidance of change within a social system", rather than the goal-setting and goal/means reconciliation stressed in the earlier definitions.[22] Donald suggests that much planning for public policy has shifted its goal from maintenance of the orderly pattern of growth to the attempt to bring about change in social structure.[23] This suggests that "planning", rather than merely "reform", might be seen as the alternative to revolution.

Waterston claims that planning has gained world-wide acceptance as a means of achieving national development objectives both in socialist and in mixed economies.[24] Frequently development planning is thought of in terms of distinct development strategies; for example, social planning concerned with social welfare targets, economic planning with national income growth, educational planning with economic development and its related manpower needs, educational development with some social phenomena such as urbanization and the need for widespread literacy. Where this occurs the planning process has to be conceived within the nation's political and administrative framework.

Huefner seems not only to view the planning process as a management tool, but one which is not value-free politically. He defines its purposes as: "to support our democratic decision-making process by improving the selection of goals and policies; and to guide administrative action to implement these goals and policies".[25] This is a far cry from the technical definition of activities which might apply for all administrative, economic or social systems. Correa's process definition, for example, is neither institution-specific nor political value-specific. He gives to educational planning three main functions: decision-making, the technical preparation of plans, and implementation and control.[26] Eide, who does not eschew these technical functions, pays more attention to their interplay with public policy-making and administration.[27] This makes planning an instrument for the strengthening of the political leadership through the provision of quantitative and research based quasi-professional arguments supporting established political directions. Planning also becomes the instrument for effective administration by requiring close interplay between the planning agency and operating agencies.

There seems little argument but that educational planning may be defined as a process (whether simply technical, primarily technical or inextricably involved with policy formation is a question of emphasis). It also seems to be accepted as a facet of management and administration, sometimes viewed as the means of improving them. It also seems to be deeply involved with political and administrative roles and traditions. It is not, therefore, an exaggeration to say that the political and administrative conditions of a country may to a large extent determine its educational planning process. Having reviewed the first element of our conceptual framework let us now look at the second.

Concepts of educational development

What is implied by the term educational development? Saunders uses it in the following context:

> Over the past decade, governments and international organizations have devoted considerable attention to planning for educational development within the context of broader national aspirations. The focus is on planning all dimensions of educational development, not exclusively on innovation.[28]

However educational development is conceptualized or measured, it would subsume the concepts of equity, as contrasted with efficiency, and quantity as compared with quality in education.

Anderson and Bowman have discussed the concept of equity versus efficiency in education. Equity, as applied to education, they define as involving some or all of the following: (1) schooling sufficient to bring every child to a given standard; (2) schooling sufficient to permit each person to reach his own potential; (3) continued opportunities for schooling as long as the gains in learning per input of teaching match some agreed norm. Efficiency they hold to be a concept concerning rationality – to get the most out of the least, whatever the nature of the rewards or ends may be.[29] They suggest that there is inherent conflict between the principle of equity and the criterion of economic efficiency.

In relation to discussions of the concept 'efficiency' other such concepts as 'productivity' and 'effectiveness' are introduced into the debate. Vaizey, for example, points to the problems inherent in trying to give operational meaning to the notion of productivity in education.[30] Rogers, on the other hand, using the micro-economic theory of the firm, and regarding the school as the production unit, argues that "the concept of productivity and efficiency is useful in attempting to analyze the performance of the educational industry".[31] Zymelman, in his discussions of "Labor, Education and Development", views educational productivity with a macro-perspective. He would define it in terms of the effectiveness of educational expenditure in transforming children into productive adults capable of contributing to the nation's development.[32] The notion of educational development also seems to include such economic concepts as maximizing benefits. These generally are measured in terms of input-output or the rate of return to a given type of study or training. Lying behind such notions is the concept of human capital and the aim of maximizing the present-value of all benefits against all costs subject to specified restraints.[33] The planning literature of the late 60s shows many examples of the application of this type of analysis in educational planning for developing countries.[34]

Definitions of educational development also have involved the concepts of quantity and quality – systems being more or less "developed" in terms of the numbers being provided with service (or the relationship of numbers at one level of study with those at higher levels of study); or systems being considered more or less "developed" in terms of organizational complexity or indicators of quality of learning. Harbison and Myers, for example, categorized the systems of seventy-five countries as being in four stages of development. Placement in a stage was made by computing the proportion of appropriate age groups in secondary-level studies (% of the population aged 15-19 in school, with some adjustment for structural differences in secondary and post-secondary school organization in the different countries).[35] John Laska also seems to relate development with quantity of service. His classification had three stages, with a number of subtypes according to ratios of the numbers of students completing the equivalent of what would in American terms be grades 4, 8 and 12.[36]

UNESCO's Asian Model classifies stages of educational development not in terms of current conditions but of trend and pace of change. Thus countries are grouped into three

categories according to the date by which it is estimated they will achieve a minimum compulsory school attendance of seven years.[37] Group A reaches this goal after 1980, Group B about 1980, and Group C before 1980.

Arguing against development plans which are primarily concerned with numbers and expansion, Philip Coombs advocated qualitative improvement "to promote the kinds of educational change required to adapt educational systems to the changing world around them, and to make [them] more efficient and effective".[38] One difficulty with planning for this type of "development" is that it is possible to count numbers but it is not only difficult to measure "quality" and "relevance", it is sometimes impossible to gain agreement as to what the terms stand for and what their relationship is to specific concerns with educational curricula, structure, teacher training, etc.

Adams and Farrell seem to suggest a categorization scheme which combines elements of quantity and quality by looking historically at stages of differentiation (the more highly evolved system not only providing more pupils and students with more service at more levels of education, but also by means of complex educational support mechanisms providing various quality levels of service). They suggest four stages, ranging in very simple societies from the undifferentiated conduct of educational activity within the family to the complex of specialization of roles and institutions which characterizes educational systems in affluent western countries.

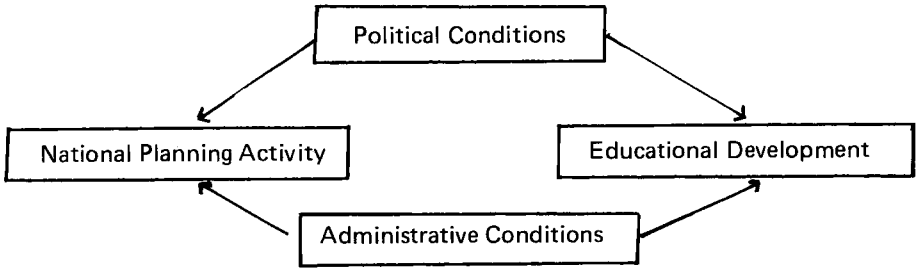
Qualitative development of educational systems may be viewed in terms which relate schooling to the society and its needs, or relate schooling only to system characteristics, as if in some way the system development were an end in itself. Saunders is an example of the former, Beeby of the latter. Discussing improving the content of elementary and secondary education, Saunders emphasized the need for evaluation of the relevance and appropriateness of educational programs in terms of economic and social criteria. He suggested a model by which it might be possible to make international comparisons using such input variables as pupils and their learning experiences, and such output variables as desired capabilities. Educational development then becomes an effort to improve the , "fit" between the educational requirement of the society and the output of the national educational system.

Beeby's analysis takes as a key variable in development the training of teachers (whose behaviour in classrooms may be said not only to deliver the service but also define its nature, pace and quality). Speaking primarily of developing countries he defines four stages of the development of national systems on the basis of two factors: the personal education of elementary school teachers, and the amount and kind of in-service training they have received. The stages are: dame school, with the bulk of teachers ill-educated and untrained; formalism, with teachers ill-educated but trained; transition, better-educated and trained; and meaning, well-educated and well-trained.[41]

It should be noted that all these attempts to calibrate educational development into stages or classes are essentially hierarchical—i.e., they classify systems into being more or less "developed" upon some criteria. They all attempt to provide a scheme which might enable analysts to compare one system with another and measure educational development (change and growth) toward some desired state. In the hands of planners they are useful to help define "goals" so that the direction and pace of the desired change can take place in a planned manner.

Analytical framework and specifications

Keeping these concepts in mind let us now consider the political and administrative conditions related to national planning for educational development. These are shown graphically below.



National development planning is likely to be influenced by many environmental factors – political, administrative, socio-cultural, and economic. However, this suggested framework is limited to conditions of the political and administrative environment which can be seen to have a direct influence on the national planning activity and educational development. Planning may be used both as an instrument to strengthen political leadership and to stimulate the desired change, or it may solely be intended to affect educational policy. Nevertheless, planning activities are influenced by and dependent upon political leadership. Political leaders' view of the role and responsibilities of leadership are ideologically based and have policy implications. Especially in developing countries, national development is the most important problem they face, and the success of their development policies is directly linked to their continuance in office. High priority is given to educational policy as a means of fostering national development. The political leadership of senior statesmen reflects their 'time orientation' and 'value perceptions' toward national development. These are terms used by Han Been Lee and Joung Whang to analyse the policy orientation of political leaders.[42] The crucial role which political attitudes play in the success of development planning has been recognized in the literature.[43]

Since political leaders' policy orientation toward national and educational development, and their commitment to planning this development, are influential factors for success, their influence upon the national planning activity would be analyzed by posing the following questions:

- What is their policy orientation toward national development?
- What political commitment is there to development planning?
- What is their policy orientation to development of the educational system?
- What political support is there for educational planning?

Among its other purposes, planning acts as a guide for administrative action in implementing agreed policies. In turn, planning itself requires that public administrators have an efficient "organizational and managerial capacity".[44] The experience of national educational planning in Asian countries has shown that "even well conceived and technically sound plans often failed to fill the expectation ... mainly because the administrative

apparatus was not adequate to the new tasks".[45] And that of Latin American countries demonstrates that "administrative deficiencies are one of the main obstacles to successful educational planning".[46]

The planning process may be largely determined by the administrative organizational structure. In reviewing world-wide development planning organizations, Waterston discusses the central planning agency with respect to function and role, to location (in the office of the chief executive, in an autonomous agency, or in a ministry), to type (cabinet committee, mixed political and functional committee, technical agency), and to organization (staff, legal authority).[47] The kind of planning agency depends largely upon the political, administrative, social and economic traditions and institutions of the country and the stage of its development. UNESCO's 1970 world survey of educational planning reported a wide range of practice on all the factors mentioned.

In most cases where there was a serious and sustained commitment to educational planning there had been created a central planning agency with specified staff working on a firm legal basis. The agency should be able to devote its major efforts to preparing plans and continuously evaluating and adjusting them according to their evaluation of educational programs—in cooperation with the other central development planning agencies. This is specialized work and it requires professional and specialized training (taken either in the country or abroad). There need to be systematic programs for the training and development of planning personnel, and in-service training facilities to provide administrators with knowledge of the essential ingredients of educational planning. So the suitability of the administrative setting would be analysed by posing the following questions:

- What is the formal position of the educational planning agency?
- Does it cooperate with related agencies within and outside of the ministry of education?
- Do the staffing arrangements provide for experienced and technically competent planners and give them opportunity to inform line administrators about the needs of educational planning?
- Is there provision for systematic training for planning personnel in the country or for sending *cadres* for training abroad?

The national planning activities for educational development can be analysed in many different ways, e.g., in terms of the form of planning, planning strategy, plan formulation and implementation. These, of course, are all interdependent, but in categorization schemes one is likely to be used as paramount. Friedman's conceptual model, for example, distinguishes four *forms* of planning: developmental and adoptive planning divided according to the degree of autonomy, and allocative and innovative planning divided according to the intention. Daniere identifies three *styles* of planning with regard to their influence on achieving national goals—compulsive, manipulative, and indicative.[48] Jantsch distinguishes three *levels* of planning: normative (or policy planning), strategic and tactical (or operational)—derived from policy-making, goal-setting, and administrative functions respectively.[49] Coombs clarifies macro- and micro-planning according to their *focus.* While the first concentrates on the broad dimensions of the system and its relationships with the economy and society, the second analyses the inner process of the system and its numerous sub-systems. Looking at the actual planning being undertaken or proposed, the form of the planning would be analyzed by posing the following questions:

- Is the form of this national educational planning developmental or adoptive?
- Allocative or innovative?

- Compulsory or indicative?
- Normative or tactical?
- Macro or micro in its chief orientation?

Educational planning may be categorized according to different conceptions of the role of education in contributing to national development. Planning has been conceived as the means of ensuring that educational institutions play their part in enabling the nation to fulfill its manpower requirements or its social policies. The Organization for Economic Cooperation and Development (OECD), for example, at one stage seemed to be advocating the so-called "manpower requirements approach" to planning educational service (particularly the expansion of the higher education system.[50] In contrast, Gareth Williams urged that the "plan should be made in such a way that educational facilities are provided for all who wish and are able to benefit from them".[51] The so-called "social demand approach" seems to have been postulated on the naive assumption that the "wishes" and "abilities" will not be directed, constrained, encouraged or cooled-out by mechanisms and selection procedures within the system itself—particularly at the secondary level, so that those who "desire" and have the "qualifications" to enter the tertiary level will approximate to the number (a) the government will fund, (b) the system will accommodate, and (c) the market will employ. The imbalances produced by the "freer market" of the social demand approach are such that it has not been widely accepted by developing countries. Its costs are too high. The planning literature attests that the process of expanding the educational system in linear fashion creates serious problems in developing countries. Coombs has argued that the strategy should be adaptation not expansion, but this is merely the wisdom of hindsight after many of the problems of expansion became all too apparent. Moreover, without some guidance as to what adaptations are desirable and feasible and how they might be accomplished, this kind of exhortation is of little benefit. Dalin also argues for planning for change rather than merely for more of the same, emphasizing that "growth without change in direction and targets is no longer meaningful, either in general policy or in educational policy".[52] The strategy issues, therefore, would be analyzed by posing the following questions:

- Has the planning strategy of this nation been oriented toward fulfilling manpower development needs or toward fulfilling the social demand for education?
- Does the planning strategy stress quantitative or qualitative change?

The preparation of a plan is a technical activity, but all agree that planners alone cannot ensure the success of planned change. Increasingly it is assumed that public participation is not only desirable but necessary—if the purposes and approaches of the plan are widely understood by the public it is more likely to be fulfilled. A sound plan requires also the collection and analysis of relevant and accurate data. Specific institutional, procedural and staff arrangements are needed, and the literature of planning is characterized by a variety of lists giving a series of essential steps in the process. Most writers spend considerable time stressing the importance of goal statements, their scope and time perspectives. Ideally these will encompass both qualitative and quantitative goals. They should also be quite clear on how these will be achieved and which takes precedence over the others. Since the goal statements or the "ideals" to be reached and the plans are statements of action, the latter may be analysed in terms of the former. If we regard them as a sort of tracking "radar", how adequately will they locate the destination? The prepared educational plans, therefore, would be analyzed by posing the following questions:

- Who has prepared the educational plans?
- What provision is there for systematically collecting, analyzing and evaluating data essential to the preparation of plans?
- What are the scope and time perspectives of educational plans? Are they reasonable?
- How were the goals derived? Are they reasonable given the time periods envisaged?

If a plan is not implemented it has little other than academic interest. There have been more failures than successes in implementing educational plans. It must be recognized, of course, that much of the educational planning reported in the literature was never intended for implementation. The preparation of a plan as a means of attracting foreign aid, the preparation of a plan as a means of heading off a political confrontation, the preparation of a plan as a means of avoiding making a specific investment in a bankrupt situation, the preparation of a plan as a means of "cooling out" a problem (in the hope that it will "go away" or at least "sit on the shelf" till a more appropriate time)—all these are well documented.

But,assuming there is the serious intention to plan for a much needed change, there is need for periodic evaluation of the implementation stage—if for no other purpose than to determine when the system has seriously departed from (or failed to fulfil) the plan. The probable success in implementation, therefore, would be analyzed by posing the following questions:

- What relationships for plan implementation exist among governmental agencies and between central and local governments?
- What factors have interfered with implementation in the past?
- Is there provision for identifying such factors and offsetting them?
- Is there provision for evaluating progress toward the goals of the plan?

Implementation can be viewed as the realization of the goals of the plan. This should not in simple-minded fashion be carried too far, of course, goals change and are "adjusted" during the course of the implementation. Nevertheless, one evaluation of a plan is by observation of the extent to which the goals were eventually achieved, and indicators used are both qualitative and quantitative.

Qualitative educational development can be assessed by observing changes in organizational structure, school curriculum, and teacher education. They would be analysed by posing such questions as:

- Has the organizational structure of the system been differentiated over the period of the plan? How? By how much?
- What changes have been made in the curriculum—particularly in the *construction* of the curriculum, the decisions on content and the allocation of school time to various subjects?
- What changes have been made in requirements for entry to the teaching profession and in the means by which teachers are trained?
- To what extent do these changes accord with the goals of the prepared plan?

Assessment of the success of implementing the quantitative goals of educational development is easier. It requires a look at growth in enrollment and the proportions of the relevant age groups served; increased numbers of teachers and their ratio to enrollment. These are analysed in terms of the goal targets by use of the following questions:

- How many students are yearly enrolled in schools, by sex? As a proportion of the relevant age group?
- How many teachers have been added to the teacher force each year?
- What change did this effect in the teacher-student ratio?
- How close have these changes brought the system to the planned targets?

The primary data for the analysis which we have briefly described are the series of public statistics, government documents and reports on education, prepared plans, special legislation and regulations and other supplementary documents. In the review, research is focused upon describing changes or trends in the problems listed over the particular time period of the plans. For a synthesis of the effects of political and administrative conditions, national planning activities, and educational development, attention will also have to be paid to the relationships between them.

Conclusion

The framework we have described concentrates on analysing national planning activities for educational development in the light of political and administrative conditons at a national level. The relationships of the educational system arising from the society and economy are beyond it. Our main concern has been confined to formal schooling, and in analyzing the planning process there should be included field observations of the behavioural patterns of persons involved in the process as well as analysis of the evidence of the effect of their activity as measured against their stated intentions.

This framework will provide a guide to the understanding of a nation's educational planning effort in the political and administrative context in which it has taken place. It should also enable the educational planners themselves to understand the range of effectiveness of their work and the constraints under which it operates. This analysis of their planning experiences will enable them to evaluate the degree of their success in achieving desired educational change. Finally, this type of analysis will also enable planners to compare the process of educational planning in nations of different political and administrative types.

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Socioeconomic Background and Achievement. Otis Dudley Duncan, David L. Featherman and Beverly Duncan. New York and London: Seminar Press, 1972. One of the Studies in Population Series under the editorship of H.H. Winsborough, University of Wisconsin.

This is not the book to take with you on a sun-seeking vacation in Mexico; this reviewer did. Its title and brightly covered jacket are quite misleading in conveying the impression of a relatively readable study – one easily absorbed by someone attuned to rapidly skimming text books. It is, in fact, a highly concentrated research report which requires careful reading. Moreover, the inclusion of succinct references to the contents, methods and results of other investigations conducted by the authors and other researchers assumes a background knowledge of the ongoing research in the field, which may well not be a reasonable expectation for the average reader.

This is one of a series entitled Studies in Population, but its subject matter falls only marginally within the field of demography. The main concern of *Socioeconomic Background and* Achievement, as the title implies, is with social mobility, particularly with occupational prestige and socioeconomic status. The aim of the work is to develop a generalized model, based upon a system of linear equations, simulating the factors and path coefficients contributing to the achievement of, and to variation in, occupational status. Information in the form of quantifiable input, either direct data or correlations between series of data, was obtained from a wide variety of sources, and a single model was then constructed, representing the generalized characteristics and interrelationships of these various research investigations. Such a method might be questioned. However, the authors contend (and I agree) that combining estimates of correlations for several different populations into one model is not essentially different from comparing the findings from one or more studies in a less formal manner. The advantage of the model lies in the likelihood that inadequacies will be more immediately apparent.

The model developed would have been much more comprehensive if all relevant influences could have been taken into account. However, understandably, certain limits had to be imposed in order to make the task of model construction manageable, and these limits had the effect of eliminating some potentially important considerations. The requirement that data input be quantifiable, necessarily excluded factors not measurable in numerical terms which nevertheless may significantly influence occupational status. Moreover, the model was based upon information for the male nonfarm population, and in most cases, the white population of the United States, so that substantial elements within the United States population were neglected. However, as the authors point out, there is no reason why similar investigations should not be extended to other components of the U.S. population or to population groups in other countries, so long as data are available.

The model and its extensions were based upon information obtained from seven major sources which were capable of supporting substantial data matrices, as well as from some additional sources which yielded fragmentary coverage of specific aspects of the questions under investigation. Since none of these data panels were developed for the specific purpose of the research reported upon in this volume, the information was usable only when it contained measurements on some combination of the variables under study. One of the major studies, *Occupational Changes in a Generation,* proved by far to be the major input source for use under these terms, and accordingly, data obtained elsewhere were required to be compatible with its data. Additional information was derived from the March 1962 *Current Population Survey,* a special survey of military manpower done for the National Opinion Research Center on behalf of the U.S. Department of Defense, and additional extensive tabulations prepared by the United States Bureau of the Census. Data were also taken from the *Detroit Area Study* for 1966, from the *Family Growth in Metropolitan America* data panels, from a University of Wisconsin questionnaire survey of high school seniors, from a national study of mental health conducted by the Survey Research Center in 1957, and from a survey of 17-year-old boys conducted in Michigan in 1957.

The basic model wasconstructed on the assumption that most of the parameters and relationships contributing to occupational status could be categorized within the three stages of the socioeconomic life cycle – family, schooling, and job. Within this framework the authors have investigated a wide variety of influences on occupational status, and formalized the relationships, through a series of assumptions based upon the research studies examined. They begin with a basic model of occupational achievement which posits a deterministic relationship between the education of the family head, the occupation of the family head, residual factors, and the education and occupational status of the respondent. The direct and indirect dependence of the education and occupational status of the respondent, upon the education and occupation of the family head and residual factors is made explicit both through a series of linear equations and the schematic expression of the model, in the context of each set of variables considered.

The sets of variables against which the model is tested are considered within three basic categories: background variables, intervening variables, and outcome variables. Under background variables, the authors consider national origin, race (where an exception is made to the restriction of the investigation to the white population), number and sex of siblings, and family stability. Intervening variables include such characteristics as intelligence, aspirations and motives, and social influences. Outcome variables reflect the level of socioeconomic occupational status of the respondent, in terms of prestige and income of either the current job or the first job, in relation to its effect upon current employment.

One of the most interesting chapters is that dealing with intelligence, considered as a socially defined quality not essentially different from that of achievement or status in the occupational sphere. It is suggested that "what we now *mean* by intelligence is something like the probability of acceptable performance (given the opportunity) in occupations varying in social status". However, as the authors note, intelligence is difficult to measure because there are many social contingencies which prevent the matching of opportunity with ability; and further, tests of intelligence are necessarily accomplished respecting one out of many possible definitions, and therefore are subject to reinterpretation. The authors see their work as going in the direction of establishing a model "that correctly specifies its role in status achievement vis-a-vis the many other contingent factors". In our view, while they may not have accomplished that end, their work is unique in that it investigates the social import of intelligence, which has been somewhat neglected in the existing literature.

One of the insights which comes through, as a result of testing the model in terms of the relationships between father's education, father's occupation, respondent's education, respondent's intelligence (IQ), and the respondent's first job, is that intelligence appears to be more important than the other influences examined, in causing some variation in first job status, although this effect is likely to be translated through level of educational attainment. However, a substantial amount of variation remains unexplained, which undermines the force of the hypothesis.

The authors' analysis of aspirations and motives, like that of intelligence, is lengthy and painstaking, and the inferences drawn, as in many other parts of the volume, lie somewhere between statistically justified conclusions, proven, semi-proven and conjectural hypotheses, and informed guesses. They themselves admit that "the data have been shown to be consistent with – that is, they cannot be used to disprove – an interpretation that treats underlying but unobserved motivational factors as relatively important determinants of occupational achievement". This is hardly a conclusion that merits the length or indepth excursion of the chapter which precedes it.

The social influences examined include such factors as the role and attitudes of wives and mothers, parents' and friends' aspirations, and the effects of schools on eventual occupational status. Since many of the findings here are indeterminate, the value of the exercise would appear to lie largely in reinforcing the conjectural hypotheses of other research investigations, and in providing a body of reference material for the researcher who is contemplating further work on those relationships.

And finally, a group of factors labelled as career contingencies are examined. These include status of first job, age upon beginning first job, migration experience, marriage disruption, number of children in the family, and time at which childbearing commenced. The results of these investigations vary in their significance. In view of the inappropriate definition which is used for migration (migration is defined as a move between time of birth and time of beginning first job), the conclusion that migration is a favourable influence upon occupational success only reinforces in a rather weak manner the findings of other studies which have been carried out more convincingly. The measurable difference in occupa-

tional status between men with intact and broken marriages is interesting and worthy of further study. The relationship between fertility and income also is worth noting, since, after allowing for the effects of other factors, the association is shown to be positive, although the gross relationship between fertility and income (i.e., not holding other factors constant) is negative. Also of interest is the analysis of the influence of childspacing, and the resulting suggestion that short intervals between marriage and first birth, like long intervals, are unfavourable to occupational status, and that an optimum interval is about 3 years.

Socioeconomic Background and Achievement represents an impressive research effort, in the number of data sources which have been culled through, and the immense task involved in sorting and ordering all that information into a format of relative internal consistency. The results are interesting, but not sufficiently convincing to suggest that further studies of a similar eclectic nature should be undertaken. The study suffers from the fact that it has depended upon materials which were not designed for the purpose at hand. This has forced the authors to make compromises in consistency of data definition which to some extent undermine confidence in the achieved results. Nevertheless, this is a book well worth reading and some of its conclusions are useful, particularly where they corroborate the findings of other studies or open up new avenues for research.

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ISEP RESEARCH COMMISSION

The commission was organized in July, 1973. Its initial task was to determine the extent to which members felt the Society should itself engage in research activities or generate alternative activities.

In 1974, an opinionnaire was mailed to all members; only 43 bothered to reply. Perhaps this indicates that our membership is not greatly concerned about the role of the Society in engaging in, or fostering, research. Two-thirds of the respondents favoured undertaking R and D activities, and twenty-six R and D activities were described; 14 non-research activities were suggested. The Commission hopes to have further discussion of the Society's research role at the 1975 conference in San Francisco and would welcome comments. Please send them to the Chairman, Professor C.K. Tanner, College of Education, University of Tennessee, Knoxville 37916. The following is a summary of the opinionnaire findings:

1. Should ISEP engage in research and development activities in the name of the Society, as one of the Society's functions? Responses: 29 Yes; 14 No.
2. If the answer to question one is *no,* please specify appropriate alternative activities in the space below:
   A. ISEP should be a clearing house for R and D resources and personnel (cataloging proposals and finished reports for the membership).
   B. Develop educational policy for higher education, not "post-secondary" education. Educational curriculum development for graduate education.
   C. Produce a good journal and disseminate information regarding R & D funds available to members.
   D. Journal, conferences, workshops, update members on current directions in R and D.
   E. Assist other agencies in identifying problems and planning research and development, disseminate R and D results, and evaluate R and D.
   F. Report research and development, and provide a forum for debating issues and findings.
   G. Identify and disseminate relevant planning information and practices.
   H. Professional societies should merely support publications and meetings (as ISEP is now doing).
   I. R and D is expensive and ISEP would spend all its energy chasing dollars. Instead it should sponsor a consulting service to ensure that appropriate R and D activities undertaken elsewhere have the necessary expertise.
   J. Too much of the Society's resources would be required for ISEP initiated research. Reporting other agency's research would be helpful, also furnishing a forum on planning techniques.
   K. Provide an information exchange for specific planning problems. Sponsor activities to develop awareness of planning needs at the local level.
   L. Undertake dissemination. Promote the philosophy and benefits of planning, and aim this at higher administration like the Chief State School Officers and other senior staff.
   M. Generate a theoretical framework for research, research agendas and ideas for policy formation.
   N. Develop an outstanding journal and make use of regional drive-in conferences.
3. If your answer to question one is *yes,* list additional R and D activities under the three suggestions.
   A. Develop realistic planning models for local districts and a workable taxonomy of planning terms, activities, and techniques.
   B. Develop a training program, with computer simulation and interaction.

C. Develop, field test and disseminate various models for planning and evaluation appropriate for local districts and state departments of education. There is also a need for the development of appropriate training programs and experiences for institutions to use in preparing prospective workers in the areas of planning, research evaluation, and dissemination.

If the Society had the financial resources, it would be useful to fund specific proposals submitted by colleges, state departments of education, and schools.

D. Design educational finance models for schools and universities.

E. Act as international consultants on EP and on R and D, and in the design of simulation models for planning in developing nations.

F. Define the role of planners in various organizations – contexts.

G. Develop simulation models of local-regional-state planning and methods to increase acceptance, among managers, of the planning process and its results.

H. Determine whether or not effective planning produces any observable or measurable results.

I. When there are the resources, provide R and D funds for ISEP members by competitive grant; initiate R and D activities in specific problem areas (as AERA often does); encourage an open climate for R and D activities (i.e., do not discriminate in encouragement of, or publication of, qualitative vs. quantitative research and development, specialist R and D vs. generalist R and D etc.).

J. Investigate the productive effects of planning activities in districts and SEAs.

K. Develop evaluation and planning models.

L. Determine the major educational issues to which planning should address itself.

M. Extend the concept of planning beyond that of *school plants* at LEA level via materials, publications etc. Interface with research units at the university level. Politicize the group through active participation with organizations which share a common cause (such as USE and its counterpart in other countries). Bring the field of organizational development to bear on comprehensive planning.

N. Curriculum improvement, testing and evaluation.

O. Get down to earth by dealing with *local* problems and plans. Do research which will encourage functional planning for identifiable problems, e.g., student and teacher dropouts; discipline and interpersonal conflicts among students, teachers, administrators and parents.

P. Study the limitations of design-oriented research; study new, or innovative specific, educational planning techniques appropriate to the highly specialized field of educational planning; study the professionalization of ISEP; determine the goals of ISEP so that in the future the Society may be evaluated in its achievement of the goals set by its members. Develop a journal that will serve as a compendium of ideas and planning efforts.

Q. We can meet problems which have been identified in advance far better than those which come without identification. More energy should be expended in seeking out the problem areas of the future.

R. Study the means for bringing about change in the orientation of public school personnel toward recognizing the need for planning.

S. Develop long-range human development models for educational systems. Develop a problem-and-administrator-information-model, matching capabilities to system problems, as an alternative to "evaluation" short-range models which are punitive in philosophy and practice.

T. Focus on intra-district planning, personnel roles, and the benefits and techniques of planning evaluation in school districts.

U. Look into the sources of extramural research support for members of the Society. Develop proposals for R and D support. When there are resources, commission specific state-of-the-art studies. Negotiate joint ventures with publishers and R and D firms. Evaluate a randomized stratified sample of plans at various governmental levels for hypotheses about improving the technical quality of forecasts and plans.

V. Conduct a market analysis and cost/benefit analysis on planning efforts, to establish guidelines for a reasonable level of investment in planning under various conditions.

W. Develop evaluation designs for measuring outcome benefits in education and the social sciences.

X. Develop legislation under which the public school board may act as the umbrella for all school boards of a region regardless of public or private financing.

C.K. Tanner

THE COMMISSION ON INTERNATIONAL PROGRAMS

The Commission on International Programs was established at the time of the 1972 Annual Meeting of the International Society of Educational Planners. Its major concerns have been: (1) continuing determination of the possible functions of the commission that are relevant to the goals and activities of the Society, (2) selection of additional members for the commission, especially from outside the United States, (3) participation of the Society in a variety of major international meetings and conferences, (4) achievement of consultative status with UNESCO. These four activities are described briefly in the remainder of this report.

The functions listed in the June 1974 report of the commission continue to serve as guidelines for its activities.

- providing official representation of the Society at other international meetings,
- arranging for cooperative sponsorship of and participation in international meetings,
- developing liaison relationships with other international organizations, with educational planning organizations around the world, and with UNESCO,
- exchange of publications with other national and international organizations,
- joint research and publication with organizations and institutions of an international character,
- assisting officers and membership in the development of an advisory board of leadership individuals from various nations,
- assisting the commission on recruiting membership around the world.

The present members of the commission are:

Frank Molyneux
Senior Lecturer in Education
University of Nottingham
Nottingham, England

Roger Diaz de Cossio
Juarez 32
Col. Tizapan
Mexico 20, D.F.

Kjell Eide
The Royal Ministry of Church and Education
Oslo, Norway

Bernard Kaplan
Past President of ISEP
Educational Policy Research Centre, Syracuse

Cicely Watson (ex-officio)
Ontario Institute for Studies in Education
Toronto, Canada

Paul H. Masoner (Commission Chairman)
University Center for International Studies
University of Pittsburgh
Pittsburgh, Pa.15261

Invitations have been extended to a number of other distinguished educational planners from France, Japan, Singapore, and the United States to become members of the commission.

REPORTS

Activities

In the summer of 1974, ISEP co-sponsored a half-day seminar workshop on educational planning at the World Assembly of the International Council on Education for Teaching, held in Singapore July 28 - August 2. The speaker and seminar leader was Dr. Chai Hon-Chan, Dean, Faculty of Education, University of Malaya, Kuala Lumpur, Malaysia. Dr. Paul H. Masoner served as moderator of the session.

It is intended that a similar session will be co-sponsored by the Society at the World Assembly of ICET to be held in West Berlin July 27 - 30.

Formal application has been made to UNESCO for consultative status for the Society. Such status will make it possible for ISEP to become more closely related to UNESCO and its activities, especially those in the field of planning. In addition, it will permit the Society to attend certain types of UNESCO and its activities, especially those in the field of planning. In addition, it will permit the Society to attend certain types of UNESCO meeting, to have a voice in policy developments of UNESCO, and eventually may result in financial support for the activities of the Society.

In the June 1974 report it was suggested that ISEP undertake the development of joint programs and activities with a number of other international organizations. Listed at that time were the following:

World Confederation of Organizations of the Teaching Profession
International Council on Education for Teaching
United Nations Educational, Scientific and Cultural Organization
North Atlantic Treaty Organization
American Association of School Administrators
American Council on Education

Further, it was also suggested that we investigate the possibility of holding joint meetings with counterpart organizations in various countries. The commission requests members to identify such organizations from their own countries and notify the ISEP Board or President so that negotiations concerning such joint meetings can be undertaken.

In the June 1974 report the following recommendation was made and it is repeated here as one of the early steps to be undertaken by ISEP which would emphasize its international role. ISEP should inaugurate annual overseas conferences. The first might be in Europe and could be held in London, in Amsterdam, or Paris. The second might focus on educational planning in Latin America and the Caribbean and could be held in Jamaica, Venezuela, or Guatemala. The commission members believe that a plan for overseas conferences is feasible and would be attractive to participants from North America and from the area in which the conference is held. It is not anticipated that attendance at such conferences would be large. They would involve perhaps 40-50 persons, but they would permit considerable professional interaction of a small group. They would be useful for the exchange of ideas. They would generate useful papers and reports and stimulate the development of educational planning techniques and concepts.

*Paul H. Masoner**

*University Professor of Education and Dean Emeritus, University of Pittsburgh.

The International Society of Educational Planners

President:	Tom Olson, North West Regional Educational Laboratory, Oregon
Vice-President and President Elect:	Cicely Watson, Ontario Institute for Studies in Education, University of Toronto
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	Kay Palmer, Nevada Department of Education
	Kenneth Tanner, University of Tennessee
	Maureen Webster, Syracuse University Research Corporation
	Ron Luckie, Georgia Department of Education
	Guy Benveniste, University of California, Berkeley
	Al White, U.S. Office of Education
	Jacquelyn Keeler, doctoral student, University of California, Berkeley

The Society was founded on December 10, 1970, in Washington, D.C. Over fifty local, state, national and international planners attended the first organizational meeting.

Since then its growth has demonstrated that there is need for a professional organization with educational planning as its exclusive concern.

Purpose

The ISEP was founded to foster the professional knowledge and interests of educational planners. Directly and indirectly it is also concerned with the state of the art of planning.

Activities

The activities of the Society are those of most professional associations: it publishes a newsletter and a journal, holds an annual conference, sponsors training workshops, conducts professional liaison with related organizations and encourages research.

Commissions

The Society has three commissions the chairmen of which sit on the Board of Directors: Research, Training and International Relations. Discussions have also been held on the feasibility of establishing commissions for the specialized interests of sub groups of its members, such as a commission on Manpower Planning, Facilities Planning or Institutional Planning.

The device of the commissions is used to advise the Board on an activity of continuing interest to the Society, but it is expected that the number and interests of the commissions will change over time.

Membership

Regular Membership: residents of United States, Canada, Europe, New Zealand, Australia and Japan – $15.00
residents of other countries – $8.00
Student Membership – $5.00
Institutional Membership – $75.00
Sustaining Members – $50.00

Send applications to the Secretary of the Society: Dr. Hal Hagen, International Society of Educational Planners, Mankato State College, Mankato, Minnesota 56001