AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523

BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY
Batch 57

1. SUBJECT CLASSIFICATION
A. PRIMARY: TEMPORARY
B. SECONDARY:

2. TITLE AND SUBTITLE
Assessing nonformal education projects, an initial exploration

3. AUTHOR(S)
Levine,Victor; Moock,J.L.

4. DOCUMENT DATE: 1977
5. NUMBER OF PAGES: 43p.
6. ARC NUMBER: ARC

7. REFERENCE ORGANIZATION NAME AND ADDRESS
ETS

8. SUPPLEMENTARY NOTES (*Sponsoring Organization, Publishers, Availability*)

9. ABSTRACT

(EDUCATION R&D)

This paper is an initial attempt to adapt traditional cost-benefit procedures for direct use by field practitioners. Cost/benefit techniques taught in university classrooms are not useful for those persons charged with conducting such analyses on project sites, especially in the area of assessing the costs and benefits of nonformal education (NFE). The paper consists of four parts. First, it considers characteristics of NFE most relevant to cost/benefit analysis. Second, it develops a simple conceptual framework for conducting economic analysis. Third, it examines problems of applications in terms of identifying types of information requirements, collecting data, defining the extent of data needs, and recognizing conflicting decision-making perspectives. Lastly, it integrates the preceding sections by use of an illustrative example of how a low-cost assessment procedure might be utilized. The paper presents a preliminary assessment procedure for NFE projects. The tentative design is at least logically consistent The practicality of the proposed methodology can be determined only under actual field conditions, where structural and organizational constraints must be dealt with.

10. CONTROL NUMBER
PN-AAD-550

11. PRICE OF DOCUMENT

12. DESCRIPTORS

13. PROJECT NUMBER

14. CONTRACT NUMBER
AID/ta-C-1347 GTS

15. TYPE OF DOCUMENT

AID 590-1 (4-74)

Not for citation or duplication without
permission of the authors.

ASSESSING NONFORMAL EDUCATION PROJECTS:

An Initial Exploration

by

Victor Levine and Joyce Lewinger Moock

Educational Testing Service
Princeton, New Jersey
March 1977

A STUDY OF THE COST EFFECTIVENESS/BENEFITS IN RELATION TO PROPOSED NON-FORMAL EDUCATION PROJECTS IN LESSER DEVELOPED COUNTRIES

Non-Formal Education Staff

James Emery
Victor Levine
Marlaine Lockheed
Joyce Moock
John Summerskill
Kan-Hua Young

This publication was prepared as part of a project sponsored and funded under a contract with the Agency for International Development (Contract No. AID/ta-C-1347). The views expressed are those of the authors and not necessarily those of the Agency.

Educational Testing Service
Princeton, New Jersey 08540

INTRODUCTION[1]

There is a wide gap between the cost/benefit techniques espoused in university classrooms and what is actually needed (or can be used) by those charged with carrying out cost/benefit analysis on project sites. Nowhere is this gap wider than in the area of nonformal education assessment. This paper is an initial attempt to operationalize traditional cost/benefit procedures for direct utilization by field practitioners. This implies recognition of the needs, capacities and objectives of those working at the project level. Thus, our aim is to bridge the gap between theoretician and practitioners by defining the problems and issues of implementing on-site project assessment, and then modifying analysis techniques accordingly.

The international development community has recently "discovered" nonformal education (NFE) as an alternative (or complement) to highly capitalized development strategies that have tended not to improve mass welfare, at least in the short run.[2] Having been disillusioned with

---

[1]The authors wish to thank James Emery, Marlaine Lockheed, Peter Moock, John Summerskill, Donald Warwick, and Kan Young for their useful suggestions on an earlier draft of this paper.

[2]The concept of nonformal education utilized in this paper includes a wide range of organized activities which go on outside the school system (basic courses in agriculture, skill acquisition, nutrition, literacy, population planning, and so on). For a general discussion concerning the history, structure, and function of nonformal education in developing countries see Coombs and Ahmed 1974, Sheffield and Diejomaoh 1972, Brembeck and Thompson 1973, Case and Niehoff 1976, Harbison 1973, and Grandstaff 1974.

earlier development strategies, this community of educators, national leaders, and donor assistance personnel should expect, at the very least, that the NFE approach be able to demonstrate its worth on a pay-as-you-go basis. As more and more resources are devoted to NFE projects in the developing world, allocative decisions will have to be made about specific project options. Thus, there is an immediate need for a convenient and low-cost method of evaluating NFE that will generate data suitable for making comparisons between the merits of individual projects and strategies. Our efforts here will be concentrated upon developing a logical framework that might improve the reliability of analytical tools needed to make these decisions. More particularly, this initial exploration is part of a broader effort by an interdisciplinary team to modify economic analysis techniques for assessing the costs and benefits of nonformal education projects in developing countries.[3]

The paper is divided into fo parts. First, we shall consider briefly those characteristics of NFE most relevant to cost/benefit analysis.

---

[3]In July 1976, the Educational Testing Service (ETS) was awarded a three year contract (AID/ta-C-1347) by the Agency for International Development to devise cost/benefit procedures for nonformal education projects in developing countries. In the second and third years of the contract, fieldwork will be conducted in three or four countries. USAID simultaneously awarded related contracts to Harvard University for the development of education planning procedures, and to EDUTEL, Palo Alto for the assessment of projects involving the use of educational technology. The three projects share a common advisory board and are expected to work jointly in several fieldsites.

This forms a contextual backdrop against which we then can attempt to develop a simple conceptual framework for conducting economic analysis. Third, we examine problems of application in terms of identifying types of information requirements, collecting data, defining the extent of data needs, and recognizing conflicting decision-making perspectives. Finally, we shall try to tie these sections together through an illustrative example of how a low-cost assessment procedure might be utilized.

I. ASSESSMENT - LIMITING CHARACTERISTICS OF NONFORMAL EDUCATION

The literature of economics and development has devoted extensive discussion to cost/benefit methodology as a framework for evaluating industrial projects. Detailed manuals and guidelines exist which examine the many technical considerations related to this type of analysis (such as discounting, shadow pricing, sensitivity analysis, the treatment of uncertainty, and the incorporation of equity as an objective.)[4]

Extensions of this framework to educational projects and the technical implications of such extensions also have attracted attention, particularly during the past ten or fifteen years.[5] Rather than review these well developed areas, we choose here to examine the implications of NFE itself, as it relates to the use of these conventional techniques.

---

[4]Procedures for evaluating industrial projects in developing countries can be found in Little and Mirrless 1968, Dasgupta, Sen and Marglin 1972, Squire and van der Tak 1975, and Roemer and Stern 1975. The general question of appropriate treatment of technical issues within a cost/benefit framework has received extensive discussion; see for example, Mishan 1975, Prest and Turvey 1965, Rivlin 1971, and Joint Economic Committee 1973.

[5]For representative discussion of the application of these techniques to educational projects see: Blaug 1970 (chapters 6, 7, and 8), Bowman et al. 1971 (particularly section III), Blaug 1968 (Part III), Thias and Carnoy 1972, Psacharopolus 1972, Wiseman 1965, Woodhall 1970, and Blaug 1967; also, useful annotated bibliographies on cost/benefit and cost/effectiveness studies can be found in Blaug 1976 and Wood and Campbell 1970.

A few authorities have considered the use of cost/benefit analysis in the assessment of NFE projects.[6] The present paper contributes to that discussion by examining the ways in which both the methodology and application of economic analysis can be made simple enough to be used under actual project conditions.

While there is nothing about NFE which results in unique difficulties in the application of cost/benefit analysis, there are some organizational and structural aspects of NFE activities, as well as the specific goals they serve, that tend to accentuate the limitations associated with the analysis of educational projects. In particular, the following five characteristics tend to undermine the effective use of conventional cost/benefit evaluation methods[7] and, thus, require special attention:

1. Dispersed Management

In many developing countries, NFE projects are not organized under one central authority, such as a ministry. Similarly, NFE projects are usually not funded under a single budget or controlled by a single financial agency. Rather, responsibility for NFE projects comes under numerous ministries, parastatal organizations, international agencies,

---

[6] See, for example, Ahmed 1975, Arrigazzi 1972, Hunter, Borus, and Mannan 1974.

[7] These characteristics were derived mainly from a review of literature on cost analysis in nonformal education conducted as an earlier part of this AID contract. See Lockheed, et al. 1977.

and even private citizen groups. Often the objectives of project managers may be quite limited and parochial relative to a more general social perspective that national planners might prefer. In order to be useful to these diverse clients, any evaluation methodology must be designed so that it can accommodate the specific interests of each client.

2. Relatively Small Project Size

By their very nature, most NFE projects tend to be fairly local and suited to relatively small groups of clientele. The extent of evaluation effort warranted by such individual projects is clearly defined by the potential benefit and cost associated with that evaluation. The more general an evaluation methodology, the more it must be adjusted for a given use, and the more expensive that application will be. With small-scale projects, if any evaluation is to occur at all, the marginal cost of that evaluation must be low. Thus, the more complete the preparation efforts of an evaluation methodology, taking into account diverse socio-political and economic conditions, the less expensive each application of that methodology will be.

3. Limited Access and Communications

Many NFE projects are very remote from urban centers where analysis would be commonly based, and organizationally detached from formal institutional systems of administrative communication. In general, methodologies for the evaluation of NFE projects should be designed so that few long-term site visits by outside experts are needed and

research tools are simple enough for local use with a minimum of external support.

4. Limited Data Base

Education is generally valued as an intermediate product, intended to serve as a complement to a variety of other inputs in the production of social outcomes. Evaluation of educational projects, therefore, requires informed estimates of the relationship existing between a myriad of elements. In general, estimates of certain fundamental national parameters are not readily accessible. This difficulty severely limits the circumstances under which evaluation of NFE projects is economically feasible. Therefore, a methodology for evaluating NFE projects should have a built-in capacity to tap existing data, or to generate new data.

5. Emphasis on Non-Monetary Objectives

Increasingly, the literature of NFE has emphasized the importance of such difficult-to-quantify objectives as increased income equity, developing good health habits, and improving self image of community members. A great deal of discussion has been directed to the treatment of such non-marketed inputs and outputs, but much less attention has been devoted to the problems of application. The importance of operationalizing a consistent procedure for treating these non-marketed

items is vital to the evaluation of NFE[8]

Obviously, not all NFE projects exhibit all five of these characteristics. However, these structural and organizational tendencies are common enough to warrant serious consideration in the design of any conceptual framework.

---

[8]As Blaug (1970: 124-125) argues, "For most purposes, an index or scale that is at least semi-cardinal must be found for each objective, that is, one that has intervals which have meaningful units of width; we must be able to say 'how much more' not simply 'more' or 'less' .... The goal may be that of maximizing interoccupational, interindustrial and inter-regional mobility, and ... this objective is quantifiable provided we are furnished with data on the labour force cross-classified by the relevant variables. Nothing but lack of ingenuity prevents us from mentioning other objectives of education and different ways of measuring them."

II. CONCEPTUAL FRAMEWORK

A. INTEGRATION OF PROCESS

In practice the specifics of costing (C), cost/effectiveness (C/E), and cost/benefit (C/B) procedures will cover an enormous range of detail. The information and technical requirements of a community leader who is considering the educational alternatives at the local level are clearly quite different from those of a national planner who is evaluating a country-wide plan and is able to call upon the resources of a central ministry or national university. In attempting to develop a costing methodology that will be of use in both situations (and applicable across countries and geographic regions), we implicitly presuppose that some thread of commonality runs through the educational costing and evaluation process. Thus, an important task of this paper must be to define the nature of this commonality and to develop a theoretical structure that serves as a basis for defining and comparing the details relevant to all users.

We believe that the development of a single theoretical structure is useful for the following reasons:

-- the essential costing process is the same for all applications;

-- the quality of decision-making by both the community leader and the national planner would improve if they had low-cost access to each other's information;

-- the confidence which can be attached to estimates of the relationships between specific variables increases with the size of prior data bases and the consistency of these estimates over time; and

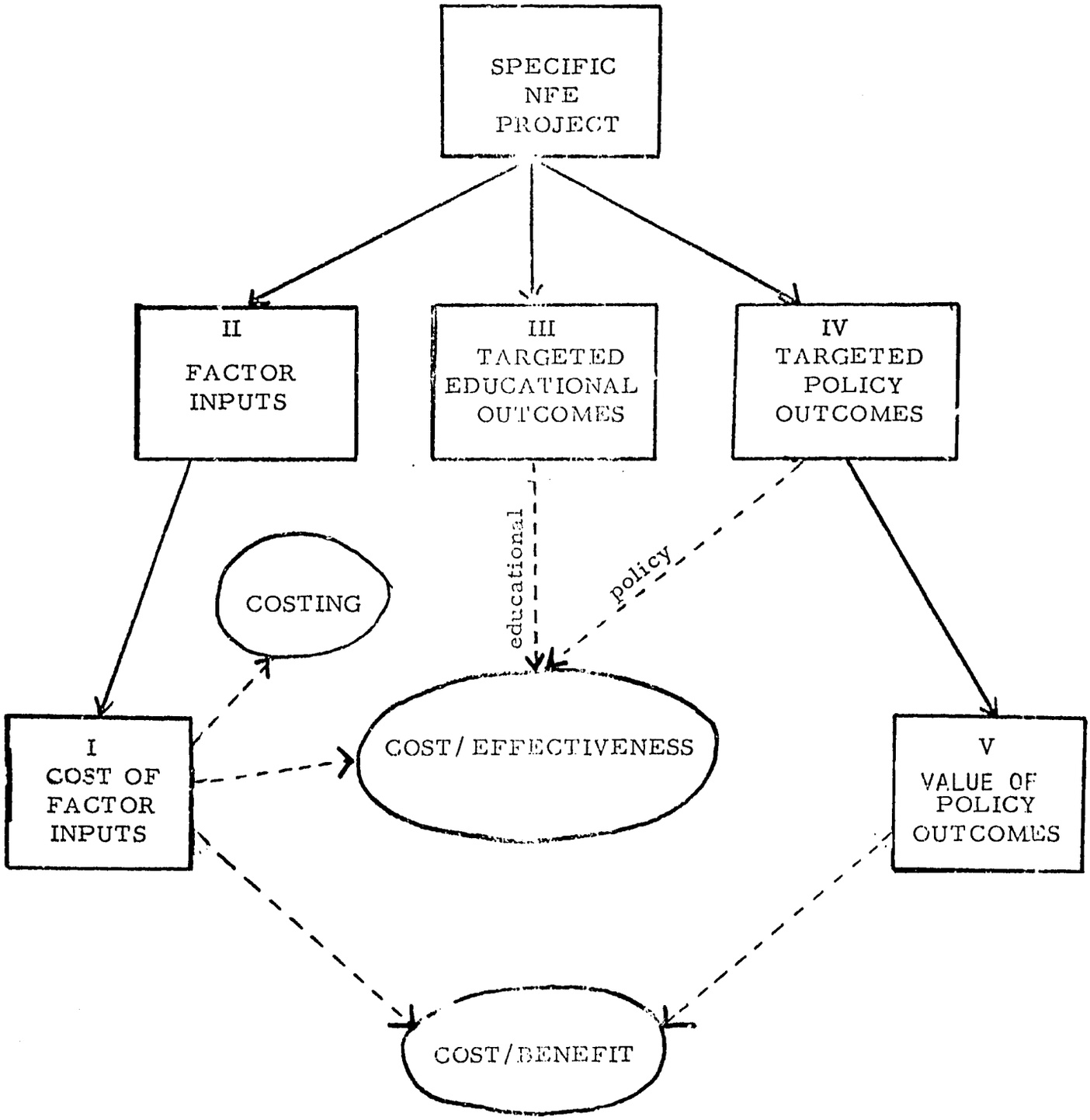
-- the reliability of these estimates is related to the extent to which analytical procedures are systematic and replicable.

Figure 1 is a schematic representation of the kind of common structure that must be established as a first step in the development of a workable costing procedure. The objective of this approach is that of giving the project evaluator an overview of the entire evaluation process while working with individual elements -- a means of locating any specific element of the evaluation in a broad, but simple conceptual framework. As Philip Coombs and Manzoor Ahmed (1974:178) have noted, "nonformal education programs function in a seamless web of interacting development factors that cannot easily be disaggregated." Thus, we need to impose a set of "seams" upon this labyrinth of relationships in a manner most compatible with generating the economic decision criteria that are desired.

B. COSTING

Costing is the process of assigning a "price tag" to an educational undertaking. The costing process is applied to individual specific projects which constitute the basic building blocks of nonformal education. By <u>specific project</u> we are referring to some explicitly defined activity in which a certain group of participants learns certain well-defined skills

Figure 1 : Typology of Variables



in a particular way using specified materials and techniques during a specified period of time. The nature of different specific projects would, of course, vary depending upon their purpose, location, and so on. The first step in costing any project is to state explicitly what that project is.

Once a specific educational project is defined, the second step in the costing process is that of listing all factor inputs (Figure 1, category II) that the project will require. This listing must include descriptions of type, quantity, and timing. For example, a project for teaching tailoring to women in a particular village might require the inputs listed in Figure 2.

Figure 2: Illustrative Non-Formal Educational Project

Factor Input	Type	Quantity	Time
meeting room	15 square meters, heated	two	4 hrs/day 3 days/week
office	6 square meters, heated (close to meeting room)	one	full time
sewing machines	Singer 241	ten	4 hrs/day 3 days/week
electric power	240 volt 50 cps	150 kwh/day	9:00 a.m. - 6:00 p.m. daily
sewing instructor	female, skilled	one	3 days/week 9 - 6
cotton cloth	brushed poplin (2 meters wide)	60 meters 70 meters 90 meters	week 1 week 2 week 3
students	female, married ages: over 35 yrs., less than 45 yrs.	ten	6 hrs/day

etc.

The more detailed the list of factor inputs, the more accurate the ultimate cost estimate can be. Although the relationship between a specific project and its corresponding list of factor inputs is almost definitional in theory, a fundamental problem in practical application is the failure of planners to include all relevant factor inputs. A procedure that guided educational assessors to recognize the kinds of factor inputs relevant to their project, and also advised them on how precise a specification was warranted, would be of value.

The third step in costing is applying a set of prices to the complete list of factor inputs. Just as the list of factor inputs must be complete, every factor input on the list must be assigned a price (category I). The prices of factor inputs available on the market usually are taken to be the market prices. Other inputs which are not marketed (or whose market prices the assessor believes to be distorted) must have "shadow prices" assigned to them.[9] The cost of a student's time, for example, is problematic. Even though the student participating in an NFE program might not be employed, his or her time still has an "opportunity cost". Factor inputs that are to be purchased past the start of the project's life

---

[9]When a market price either does not exist, or does not reflect the true scarcity value of an input, the actual economic value must be estimated by inputing a 'shadow price' to it which reflects its value in its best alternative use. This value is often called the 'opportunity cost' because the opportunity to proceed with the best alternative would be precluded by using the input in the application under consideration.

should be costed at a discounted price. For example, the month's salary paid to an instructor in the second year of a project has a different "present value" than the same nominal salary in the first year. Similarly the costs of all inputs that occur at different points in time (cloth, thread, rent, electricity, etc.) should be discounted to the present, so that they become comparable. Special expenditures that might be undertaken to allow implementation of the specific project might have other, complementary uses. For example, charging the full cost of bringing electricity to the village, as a cost of this sewing project, would certainly be inappropriate. Some minimal understanding of "shadow prices", "opportunity costs", and "discounting" is critical if the assessor is to determine the correct cost estimate (category I) for each element in the list of factor inputs (category II).[10]

The reliability of any project cost estimate depends, in sum, on (1) the comprehensiveness of the listing of factor inputs, and (2) the consistency and precision with which prices are assigned to each element.

---

[10] A systematic approach to determining the appropriate price of each factor input would be included in the methodology. Descriptions of type, quantity, and rate of usage would be defined in a fill-in-the blank format. The same format might be used for "plugging-in" factor prices. When the appropriate costing methodology has been completed, the user would have a relatively comprehensive description of the project's activities, factor input needs, and costs. For a representation discussion of the complexities involved in costing education projects, see Edding 1966, Hallak 1969, Vaizey and Chesswas 1967, Jamison, Klees, and Wells 1976, Coombs and Hallak 1972, and Blaug 1970.

C. COST/EFFECTIVENESS

It should be emphasized that, in describing the specific project as the basic unit of analysis, we are examining an educational activity, not an outcome. For example, the NFE sewing project might involve demonstrations of certain tailoring activities, by an instructor with a defined level of training, for a given period of time. The outcomes that might be associated with that activity might vary enormously depending on environmental factors. For example, literate women might learn to sew more quickly that nonliterate women; women who thought that they could gain wage employment might be more motivated than women who lived in a village with no jobs and who were not free to migrate. The point is that the same NFE project might have the same cost in two different settings, but radically different educational outcomes. The process of determining what the costs of a project are, although an essential step, is not a sufficient basis for determining whether the project is worth undertaking.

1. Targeted Educational Outcomes (category III)

We assume that any educational project can be conceived as entailing the transfer of skills, attitudes or information to participants. Project assessment requires estimating, to some extent, this transfer in terms that can be measured behaviorally.[11] Obviously, an estimate of how many

---

[11] Educational outcomes need not be measured precisely to evaluate a project. In many cases, outcomes which fall into the realm of socio-economic policy (what we call targeted policy outcome) could be measured directly, or through appropriate proxies, without the intervening educational outcomes ever being directly measured themselves. Regardless of the design of the actual assessment, this intervening set of targeted educational outcomes should be conceived of and defined in terms that are compatible with behavioral measurement. Such a procedure vastly increases the likelihood that there will exist congruence between the specific project and the targeted policy outcomes.

people may be exposed to the education project is inadequate; the relevant and more difficult question is "In what way will they be changed by this exposure?"

Each project under consideration should be costed separately, and a comparison should then be made between the cost (category I) and outcome measured in behavioral units (category III). If alternative projects designed to produce the same outcome were to be compared, the one with the lowest cost/effectiveness ratio would be preferred.

In practice, however, such comparisons are complicated by the fact that even the most limited projects invariably involve multiple outcomes. Two hypothetical projects might be very similar but vary in several ways.[12] Furthermore, the relationship between a project and its expected educational outcome is greatly influenced by the environment in which it occurs. The participation rate and retention rate of any project will depend on

---

[12] For example, given two projects that are essentially alike, they might differ in some outputs (project A produces outputs that project B does not, while project B produces other outputs that A does not). Even if the two projects produced exactly the same outputs, they might differ in output proportions (A produces more of output 1 than B but less of output 2). Even if they produced outputs in the same proportions, they might differ in timing (A produces 1 earlier than B and 2 later than B). In cases where two options were mutually exclusive, a favorable cost/effectiveness (or even cost/benefit) ratio in itself would not provide a completely unambiguous guide to project selection. In all cases, the ultimate objective should be maximization of net benefits, not calculated ratios.

the health, prior educational attainment, and present alternatives of the participants, as well as of their perception of benefits from attending the sessions.

2. Targeted Policy Outcomes (category IV)

Since the ultimate goal of most NFE projects is to increase the political and economic participation of low income populations, project objectives tend to be described more broadly than in simple pedagogical terms. As Thomas La Belle argues, creating opportunities to transfer and apply what is learned is equally important as augmenting cognitive abilities.

> Although it may be "good" to be literate or to be critical of one's reality, and both may have long term benefits, such efforts in the short term are as likely to lead to frustration as they are to more decision-making power or increased socio-economic status. Without inputs like jobs, credit and organization in a supportive social and bio-physical environment, new behaviors learned in non-formal programs of education have little impact on participants and they become mere tokens in the presence of an individual's real life conditions. (La Belle 1976: 345)

Behavioral outcomes realized in the political, social, or economic realms (e.g., an individual's entry into wage employment, the adoption of family planning techniques, the purchase and correct application of a crop enhancing fertilizer, or voting in a local or national election), we have chosen to call "policy outcomes," to distinguish them from the more immediate, educational outcomes.[13]

---

[13] In this section, which is devoted specifically to developing a conceptual framework, we are assuming that policy outcomes are taken as given. The question of "Whose policy?" is deferred to the next section of this paper, "Applications".

Clearly, we assume a causal chain in any set of policy outcomes that we associate with an educational project. For example, a vocational training project could be associated with a particular cluster of skills. These skills might be linked to projections of changes in participant incomes, migration, regional income distribution, nutritional changes, fertility changes, and so on. Very broad and unsubstantiated claims have been put forth in support of certain NFE approaches, and it is not unreasonable to ask which social benefits are thought to be linked to a particular project, and then to consider whether the postulated relationship is at all plausible.

It should be emphasized that educational programs are only one of many vehicles for affecting policy outcomes. In many cases the desired outcome can be brought about much more economically through changes in programs outside the educational sector. For example, use of fertilizer might be encouraged more economically by subsidizing the purchase price than by a farmer training program.

The calculation of policy cost/effectiveness ratios is more difficult than educational cost/effectiveness ratios because estimates of the relationship of policy outcomes to factor inputs involves an intervening set of educational outcomes. Exact policy C/E analysis of NFE projects will always be beyond our analytical capacity due to insufficient data on the extremely complex relationships that exist between relevant variables.

The justification for attempting to conduct such analysis in a formal and systematic manner lies in the fact that such an analysis will occur (and be used as a decision criterion) whether or not it is systematically undertaken. The present surge of interest in NFE is due in large part to our growing awareness of the importance of various policy outcomes as products of the educational process. In the coming decade it is likely that the choice of educational options will be based increasingly upon the assumed impact of NFE projects on income distribution, equality of opportunity, birth rates and similar pressing social issues. If such decisions are to be made wisely, it is essential that we begin to improve our best guesses concerning the complex relationships between education and desired policy outcomes.

D. COST/BENEFIT

The essence of cost/benefit analysis is the comparison of the value of a project's cost (the sum of the elements in category I) with the value of the project's policy outcomes. The value of all outcomes must be stated in the same units. The most convenient common base, and one that allows an easy comparison with the project's cost, is some monetary unit discounted to a fixed point in time. The imposition of value-commonality requires the application of "shadow pricing" procedures to all elements of non-marketed outcome, in a manner analogous to the pricing of factor inputs, discussed above.

The conditions in many LDCs which have generated interest in non-formal approaches to education also necessitate utilization of these very

difficult shadow-pricing techniques. In job markets where a substantial proportion of the educated manpower is employed in the public sector at administered wage levels, the techniques of using an earnings increment as a social benefit measure is inadequate. Similarly, when the distribution of output (equity), as opposed to the level of output (efficiency), is the object of evaluation, weights must be assigned that reflect the policy maker's assessment of the relative "needs" of different groups in society.

The overall cost/benefit evaluation of any specific project involves:

1. complete specification of relevant factor inputs (category II);
2. transformation of these elements into value equivalents (category I) which can be reduced to a single value -- project cost;
3. estimation of policy outcomes associated with the project (IV), usually through estimation of a set of intervening educational outcomes (category III); and
4. transformation of these policy outcomes (category IV) into value equivalents which can be reduced to a single value -- the benefits.

The estimation of costs and benefits allows the comparison of vastly dissimilar NFE options and, ideally, provides a simple, unambiguous decision-guideline applicable in all situations. However, the actual validity of any cost/benefit analysis depends upon the evaluator's ability to identify the critical variables and to tap local sources of knowledge. We shall now consider some of the basic difficulties related to field application.

III. APPLICATION: WHAT, WHERE, HOW MUCH, AND WHO?

> The difficulty of implementing benefit-cost anaysis is not one of defining weights in principle, but of defining them operationally. We are roughly in the position of the mice in Aesop's fable who found their ingenious plan of putting a bell on the cat to warn them of his presence foiled by the lack of a suitable means of implementing the plan.
> (Dasgupta, Sen, and Marglin 1972: 247)

As we have indicated, a fairly large body of literature exists that is devoted to the subject of project evaluation. A potential project assessor might read this material, understand it, find it relevant to his project, and yet not have the foggiest idea of how to begin the actual cost/benefit analysis of the project at hand.

Ideally, a costing methodology would be a custom designed set of step-by-step instructions that is perfectly related to the project under consideration. The list of variables relevant to an NFE electronics project would be different than that needed to evaluate an NFE national literacy corps. The methodology employed in evaluating a project must be determined by the nature and needs of the project. Similarly, the format, the degree of detail, and the level of analytical sophistication will vary with the capacity of the individual or institution conducting the costing analysis. Quite obviously, a project designed at the local level cannot be expected to receive the sophisticated analysis given a multi-million dollar project at the national level. Since NFE projects are so diverse, and the steps appropriate to their evaluation so sensitive to the local context in which they

function, any pre-designed, rigid evaluation methodology would be unworkable.

What we are proposing, then, is a prototype of a methodology for custom designing project evaluations, on-site. Immediately we are faced with the field-level problems of what information is required for economic analysis, where this information can be gathered, how much information is necessary and from whose perspective the relevant variables will be identified.

A. WHAT INFORMATION IS REQUIRED?

Although there may be immense diversity in the range of NFE education activities, and each project is in some way unique, there are certain commonalities which do exist and which transcend national boundaries, in terms of the kinds of information needed to conduct analysis. For example, if we consider agricultural extension as a class of NFE activity there are certain variables within the conceptual categories II, III, and IV of Figure 1 which are likely to occur with high frequency regardless of the specific extension project under consideration. In the process of generating a list of factor inputs, questions that should occur routinely include whether the project employs field-level agents, whether it uses community demonstration plots, whether it involves farmer training centers, and so on. An affirmative answer to any of these questions could be used, in turn, to generate a sub-list of relevant questions. If, for example, the

project is intended to include the use of demonstration plots, questions of who will supervise the enterprise, how much labor will be required, and what inputs of seed, fertilizer, and insecticide will be used are immediately suggested. Answers to each of these questions, in turn, can be used to generate another sub-set of questions which ultimately can be directed toward providing a long list of factor inputs in quantified units.

In a similar fashion, one could develop a suggestive hierarchical list of targeted educational outcomes through such questions as whether the project attempts to transfer information about the use of fertilizers, interplanting, irrigation, time-phased weedings, and/or crop rotation. Again, affirmative answers to any of these questions could direct the project assessor toward further relevant questions, and these, in turn, to lower order and more specific lists.

The application of this approach to identifying targeted policy outcomes is perhaps more difficult than educational outcomes but, if carefully devised, the test of questions could provide an excellent vehicle for identifying "white elephant" projects. The greatest utility of this approach, in terms of category IV, may be in directing the assessor's attention to information <u>requirements</u> about the relationship of project inputs and targeted outcomes within the context of other physical and human environmental conditions. If, for example, a project is intended to teach farming techniques to primary school

leavers, questions about the leaver's control of land and labor, his investment capital, his access to credit, storage facilities, marketing channels, transportation, and so on become vital considerations.

Obviously, there will never be a strictly systematized methodology for defining the variables relevant to a given project assessment. However, enough commonality exists in the basic data needs for assessing general types of projects that there would be an advantage in generating viable lists through a process of hierarchical elimination. Hopefully, the list of elements in each project category would continue to grow and become more sophisticated as the process was used. During the course of our project, we shall attempt to develop prototypical lists for one or two types of projects which could be applied to similarly intentioned projects under different socio-cultural and economic conditions.

Ideally, the assessor of a given project would be provided with a system for identifying (in very broad terms) which elements in each of the three categories (factor inputs, educational outcomes, policy outcomes) were relevant to the particular project under observation and the broader socio-economic context in which it is set. The key to the process would be the elimination of options (and therefore questions) that are irrelevant to the project under consideration. The process would be directed toward specifying a list of indicators needed for the economic analysis of the particular project.

Although the process could never be comprehensive, or perfectly fitted to any specific project, it would provide a good basis for beginning variable identification and a structure upon which the project assessor could apply his judgment and familiarity with the details of the local situation. Thus, a procedural guide for addressing the question of what information is needed should be organized so that it elicits from its user a comprehensive list of the variables relevant to the particular project under consideration.[14]

B. WHERE CAN THIS INFORMATION BE GATHERED?

In most countries, more data exist in one form or another than is generally realized. Unfortunately, such data are often dispersed, not inventoried, and difficult to access. NFE projects, in particular, rarely receive systematic evaluation, and projects are generally not described in a uniform manner which could provide guidelines for planning and allocative decision-making in the future.

For the purposes of NFE assessment, we have defined three major sources of base-line information requirements. The first can be categorized as national parameters. There are certain data needs which can be defined from a national (perhaps regional) perspective only. For example, projections of future regional manpower needs,

---

[14] A good discussion of the problems of external evaluation is presented in Chambers (1974: 118-129).

population growth, the growth of GNP, the development of markets and infrastructure, government hiring and wage policies, and the expansion of input subsidies and credit might all be essential for the evaluation of a specific project. The same basic national parameters are needed for planning a wide variety of different individual projects.

The collection and organization of this information should be undertaken by a central research organization, and would serve as a prerequisite to the assessment of individual projects. The concept of such a central data base for project analysis is not new, and is discussed in detail in Dasgupta, Sen, and Marglin 1972 (under the title "national parameters"), and in Squire and van der Tak 1975 (under the titie "country parameters"). The task of developing a national data base, defining variables and estimating relationships is primarily a one-time operation that is best undertaken by specialists.[15]

A second major source of information would be estimates of project-specific parameters for which some previous information exists, but which are not included among the set of national parameters. The primary source of these estimates would be the past evaluation of

---

[15] The development of procedures for the generation of national baseline information is not a part of the ETS contract. However, the problem is being explored under a separate but related contract by a team at Harvard University.

projects of similar types both in-country and abroad. In many cases, these estimates of relationships would be inappropriate to the specific project under consideration because of differences in the human and physical environment in which they occurred. In those cases in which the use of previous estimates does seem appropriate, we would generally attach a higher level of confidence to these past estimates the more consistent and numerous they have been, and the more similar the environments in which they were generated. Clearly, as more projects are evaluated, the body of estimates which might support future analyses will grow. The key to improving this source of evaluation information is a low-cost system for storage of and access to project evaluations.[16]

In many cases, estimates of the relationships needed for project evaluation will best be provided by "informed guesses" as to what range of outcomes is plausible. After having specified the information needs and having filled as many of these needs as possible by reference to a central data base of national parameters and estimates from previous evaluation, the project assessor would want to verify that these estimates are appropriate for the project at hand, and to gather estimates of relationships for which he has not previous data. This necessitates conducting research directly at the project site.

---

[16]Preliminary discussions between Harvard and ETS on the desirability of joint participation in this endeavor (in common field sites) are underway.

In support of this vital activity, it would be useful to provide the project assessor with a set of research options--different methods by which the desired information might be collected (e.g., cross-sectional surveys, participant observation and tracer studies). The choice of the best option (or mix of options) would depend, in part, upon the capacity of the project assessor to conduct the necessary activities. The selection of one technique (say, a random household survey) might depend on a variety of capacity variables such as the availability of trained interviewers, the literacy of the respondents, transportation facilities, knowledge of local dialect, and timing. We aim to provide the assessor with a descriptive set of research options applicable to each type of information requirement, and a methodology for gauging the capacity of his client's (see section IV) research organization to utilize each option.

C. HOW MUCH INFORMATION IS NECESSARY?

Returning for the moment to our notion of suggestive hierarchical lists, the issue of how far to proceed with variable disaggregation requires some attention. As various input or outcome clusters are disaggregated and defined in increasingly finer detail, the project assessor's estimates of expected relationships can be specified with increased accuracy. On the other hand, greater detail in the specification of variables inevitably entails higher costs in data gathering and in analysis. While it is highly desirable that the option of dis-

aggregation be available to the project assessor, it is not desirable that he exercise it automatically.

The guidelines for determining how much information is necessary are best developed in the field, based upon the perceptions of those charged with carrying out the assessment task. There are, however, some general considerations which govern this procedure: namely, the costs and benefits of incremental improvements in the estimates for each variable. Having completed an initial quantified description of the project at hand in very broad terms, the assessor would review his rough first estimates to see where improvement was warranted. His decision to gather more data would depend upon his perceived need for more accurate estimates and his capacity to generate them. In considering his need, he might ask:

--How accurate do I feel the present estimate is?

--How sensitive would the outcome of the assessment be to errors in variable specification and measurement? (A small error in an important variable might be ultimately far more damaging than a large error in an unimportant variable.)

In considering his capacity, he might ask:

--How much would it cost to generate a better estimate?

--How much better than what I now have would such an estimate really be?

--What viable research options currently exist to gain a more accurate estimate?

--Are there personnel and support resources available to undertake additional research?

Ultimately, we shall attempt to assist the project assessor in deciding where and when to improve the quality of his estimates, by systematizing to a reasonable extent the interaction of these need and capacity issues.[17]

D. FROM WHOSE PERSPECTIVE?

Operationally, a dichotomy has existed in cost/benefit analysis between the "social" and "private" points of view. As useful as this dichotomy is in conceptually framing approaches to analysis, it is not necessarily suited to the realities of parochial administrative decision-making. Analysis from the 'social perspective' has addressed the question of how effectively a given option serves general societal welfare; in application, benefits have generally been measured in terms of contribution to aggregate production. Private rate-of-return studies have considered benefits in terms of the value of differences in individual earnings. In virtually all cases, projections of the impact of an educational treatment upon lifetime market earnings have remained

---

[17]Once an initial conceptualization of the project is mapped out and preliminary estimates of the relationships between variables are made, "sensitivity analysis" of the responsiveness of the decision variable to errors in each estimated variable could easily be calculated. Once a semi-standardized system of variable indicators is introduced, data processing equipment could provide project assessors with immediate and extremely low cost answers to questions such as: "What would happen to our estimate of this project's cost/effectiveness if instructor salaries rose by 10%, if our projections of participant wastage rates were off by 10%, if our projection of the employment rate among project completers was too high by 5%, etc.?" As critical estimates and variables were identified, they could be subjected to closer examination and the accuracy of estimates could be increased.

the central indicator of outcomes.

1. Assigning Values

Increasingly, ministries and donors are designing NFE projects to produce policy outcomes such as income equity and improved self-image, which are hard to measure and which do not lend themselves to neat theoretical treatment in terms of imputing prices or values. On the one hand, systematic treatment of multiple outcomes requires the imputation of "shadow prices" in common units. On the other hand, economic theory provides little basis upon which such prices can be estimated.

In assessing a project intended to produce these types of policy outcomes, two different kinds of questions can be asked:

1. How effective will this project be in bringing about the targeted outcomes?

2. From a broad societal perspective, what value should be attached to these outcomes if they are brought about?

The answer to the first question is an attempt to define a technical production relationship (project X will increase participants' self-image by so many units, and will increase income equity by so many units on particular interval scales.) An answer to the second question (how much better off will society be if these changes in self-image and income equity are brought about?), although extremely important, is very difficult to obtain.

The procedure we propose for combining disparate policy outcomes addresses only the first question. In application, the methodology

accepts as given the values assigned to policy outcomes by each client.[18] In proposing this approach, we are not suggesting that the second question be abandoned. Rather we recognize that, in the individual assessment of specific projects, it is too ambitious a criterion. We see a system in which policy values are taken as given at the project level, and where periodic consideration of the social welfare implications of different policy outcomes is undertaken as a separate activity.

2. Multiple Decision-Making

Any project option involving the allocation of funds must inevitably be approved at a variety of decision levels. Whether conceived of as such, and regardless of the extent to which the effort is sytematic, EACH LEVEL OF DECISION-MAKING CONDUCTS A COST/BENEFIT ANALYSIS OF THE SAME PROJECT. An interesting feature of NFE projects is the extent to which these different levels of decision-making will involve entirely different institutions. Aside from differences in size, sophistication, staff, resources, and so on, each decision-maker is going to conduct this analysis from a limited and parochial perspective that reflects his or her own independent value set.

---

[18] Even this limited perspective requires, however, that the values a client assigns to different policy outcomes be known. The difficulties associated with defining a decision-maker's actual value set are enormous. For a discussion of this problem, see Weisbrod 1968, Squire and van der Tak 1975.(particularly chapters seven and ten), Dasgupta, Sen and Marglin 1972 (particularly chapter twelve).

Two of the major reasons that project evaluations have been missing, or when present, inadequate in scope, are the tendencies for operational project personnel to view external evaluators as spies representing alien interests and for evaluators to view field personnel as uncooperative and biased. It is doubtful that any assessment methodology will be used unless it is designed in the interests of the relevant decision-maker.

IV. UTILIZATION: AN ILLUSTRATIVE EXAMPLE

In section I of this paper, we examined five characteristics of NFE projects which we felt stood in the way of successful C/B analysis. Section II developed a theoretical model for costing, cost/effectiveness, and cost/benefit analyses of specific projects. Section III examined the ways in which this model could be applied to actual analysis on-site, and considered some related application issues. In this section, we shall attempt to tie the previous sections together by suggesting a hypothetical example of how such a methodology might work.

For reasons discussed throughout this paper, an "assessment kit" which might be sent directly to a project assessor is not a workable option. We have been considering a type of project analysis in which control over evaluation design lies with the project assessor, and analysis techniques are tailored to the client's capabilities. As a precondition for this type of project assessment, we are convinced that there must exist in-country persons who are capable of providing expertise in support of project appraisal. Such individuals, who would function as "assessment consultants," might work in the planning ministry or in an institute for development studies.

Ideally, these persons would serve as links in an international NFE data network, drawing from and providing clients with project information.[19] The assessment consultant would assist the client to define the relationships among specific variables, using information from a wide variety of sources.

---

[19] For a provocative discussion of knowledge networks for educational assessment, see Hudson et al. 1976

Data on costs, learning strategies, complementary services, socio-economic environment, and benefits gauged from individual, community, and national perspectives would be organized into categories useful for future program planning and assessment.

Let us suppose, for example, that the local manager of a small tailoring project in a remote rural area 150 miles from the national capital wishes to secure additional funding in order to expand the scope of his training scheme. Given the assessment procedures we are envisioning, the following sequence of events might occur:

1. The project manager, Mr. Omolo, is directed to Mr. Goodwill, representative of an external donor agency interested in NFE projects of this nature. Based on initial conversations and a visit to the field site, Mr. Goodwill suggests that Mr. Omolo provide a systematic assessment of his project within a cost/effectiveness framework. Contingent upon the approval of the Ministry of Community Development, Mr. Goodwill agrees to have his agency pay for this preliminary assessment.

2. Mr. Omolo now pays a visit to the assessment consultant at the university. The assessment consultant, Ms. Adula, gauges the capacity of Mr. Omolo's project staff to conduct a cost/effectiveness assessment, and then together with Mr. Omolo develops a preliminary assessment design and estimates the cost of conducting the project assessment.

3. Mr. Omolo returns to the project site, and with the aid of the assessment design and research instruments provided by Ms. Adula, directs his staff in the collection of the required data.

4. At the same time, Ms. Adula retrieves the required baseline information relevant to the project from a number of sources outside the project area.

5. Upon the completion of his preliminary assessment, Mr. Omolo returns with his raw data for consultation with Ms. Adula. Using the information provided in her client's assessment, the consultant conducts a verification of the costing with a higher level of economic sophistication and certainty, and cross-checks as much of the information as possible. While the procedural guide provided

to the client would be geared toward a "paper and pencil" approach to serve a wide range of client users, the consultant's analysis could employ electronic data processing techniques where appropriate (such as retrieving supporting data from a machine-readable data base).

6. Based upon this round of assessment, and a sensitivity analysis of each major element in it, Ms. Alula and Mr. Omolo decide that a more accurate estimate of, say, projected student wastage rates is warranted. After reviewing options for obtaining this improved estimate, they decide that a university researcher will visit the project site for one week in order to conduct the needed research.

7. These additional data are then incorporated into a final assessment, and a copy of the assessment report is given by Mr. Omolo to Mr. Goodwill. Another copy of the report and the coded data are stored in the data bank.

8. Upon examining this report, Mr. Goodwill concludes that the project seems technically sound and decides to proceed with an assessment of this project's probable impact on income distribution and its effect on the status of rural women (two areas of major importance to his funding agency).

9. Mr. Goodwill contacts Ms. Adula at the university and outlines his assessment needs. Drawing upon the assessment design developed with Mr. Omolo, it is found that relatively little additional data are needed. Substantial amounts of data suitable to his purpose have recently been collected in a rural household income survey and provide adequate estimates of the information needed. This application of pre-existent data also is stored in the data bank.

10. Having found, on the basis of this assessment, that the project is compatible with his agency's policy requirements, Mr. Goodwill presents the project documents and assessments to Mr. Maduma, Assistant Secretary of the Ministry of Community Development. Mr. Maduma, after determining that this project would be in conformance with national planning priorities gives formal Ministry approval to the proposed expansion of the project, and the project is funded.

In presenting our illustration in such an oversimplified manner, we have deliberately chosen to ignore the many organizational and political considerations

that would constrain assessment under actual conditions.[20] This simplified example is intended only to demonstrate a potentially useful information flow and reflects the emphasis we have placed upon the following features of implementation. First, the reader's attention is called to the fact that at each level of assessment, the locus of control over the assessment rested with the relevant client. For example, the design and implementation of the initial assessment were controlled by Mr. Omolo. We feel that this is essential for two reasons:

a) If on-site research is conducted by outside evaluators, it can be very costly. If the assessment cost is to be kept low, it is essential that project staff personnel conduct as much of the data gathering as possible.

b) Project personnel have project specific experience, contacts, and insights which allow them to perceive vital relationships and to collect types of data that would not be easily available to short-term external researchers. Unless the assessment is perceived as serving the direct interests of the project staff, we believe that they will generally not participate in project assessment in a meaningful way.

As successive levels of assessment are conducted, the locus of control shifts, and previously gathered data are subject to review. In all cases, the assessment consultant's role is that of serving as a resource for her client, not of directing the assessment.

---

[20] In discussing an earlier draft of this paper, Donald Warwick of Harvard University pointed out that the assessment consultant might in many instances become caught in the politically precarious position of assisting donors, project managers, or ministry officials in describing project costs and benefits in a more or less favorable light dependent upon personal and organizational motivations. Clearly, the actual establishment of the assessment consultant position would have to be tailored to the context of individual administrative and political systems.

A second related feature involved the methodology's capacity to explicitly accommodate different value perspectives. The criterion by which targeted outcomes are weighted at each assessment level changes in direct response to the stated values of the client. The capability of incorporating these differences into the quantified decision criterion makes the methodology extremely flexible.

A third aspect related to the cost of application. The proposed system, which allows the multiple use of a common core of assessment data in the reanalysis of projects, greatly reduces the cost of subsequent analyses by different users. Even greater economies of scale are realized in the use of a central data bank. The key to low cost assessment rests upon the capacity to draw heavily upon pre-collected data. Since the data generated in each assessment are fed into the common data bank, the cost of marginal project assessment could be expected to fall (and the reliability of estimates to rise) as the system is used over time.

We have attempted in this paper to design a preliminary assessment procedure for NFE projects which is sensitive to the general characteristics of NFE and to the needs and capacities of operational field personnel as we now perceive them. The most we can hope for in this armchair stage of our ETS project is a logical consistency in our tentative design. The ultimate practicality of such a methodology can only be determined under actual field conditions, where structural and organizational constraints can no longer be held in abeyance.

Bibliography

Ahmed, M.
1975 The Economics of Nonformal Education: Resources, Costs and Benefits. New York: Praeger Publishers.

Arrigazzi, L.
1972 Evaluating the Expansion of a Vocational Training Programme. In IIEP, Educational Cost Analysis in Action: Case Studies for Planners. Paris: UNESCO.

Blaug, M.
1967 A Cost-Benefit Approach to Educational Planning in Developing Countries. Washington, D. C., IBRD Report No. EC-157.

_____. (Ed.)
1968 Economics of Education: Readings. London: Penguin.

_____.
1970 An Introduction to the Economics of Education. Middlesex, England: Penguin.

_____.
1976 The Economics of Education: An Annotated Bibliography. London: Pergamon Press.

Bowman, J., Debeauvais, M., Komarov, V. and Vaizey, J. (Eds.)
1968 Readings in the Economics of Education. Paris: UNESCO.

Brembeck, C. and Thompson, T. (Eds.)
1973 New Strategies for Educational Development. Lexington, Massachusetts: D. C. Heath.

Case, H. and Niehoff, R.
1976 Educational Alternatives in National Development: Suggestions for Policy Makers. Program of Studies in Non-Formal Education, Michigan State University, East Lansing, Michigan.

Chambers, R.
1974 Managing Rural Development: Ideas and Experiences from East Africa. Upsala: Scandinavian Institute of African Studies.

Coombs, P. and Hallak, J.
1972 Managing Educational Costs. New York: Oxford University Press.

Coombs, P. and Ahmed, M.
1974 Attacking Rural Poverty: How Nonformal Education Can Help. Baltimore: Johns Hopkins University Press.

Dasgupta, P., Sen, A. and Marglin, S.
1972 Guidelines for Project Evaluation. New York: UNIDO.

Edding, F.
1966 Methods of Analysing Educational Outlay. Paris: UNESCO.

Grandstaff, M. (Ed.)
1974 Historical Perspectives on Non-Formal Education. Program of Studies in Non-Formal Education, Michigan State University, East Lansing, Michigan.

Hallak, J.
1969 The Analysis of Educational Costs and Expenditures. Paris: UNESCO.

Harbison, F.
1973 Human Resources as the Wealth of Nations. London: Oxford University Press.

Hudson, B., Davis, R., Mason, D., and Siembeb, W.
1976 Knowledge Networks for Educational Planning Strategies for the Better Use of University Resources. A Networks Project Report. School of Architecture and Urban Planning, University of California, Los Angeles.

Hunter, J., Borus, M., and Mannan, A.
1974 Economics of Non-Formal Education. Program of Study in Non-Formal Education. Michigan State University, East Lansing, Michigan.

Jamison, D., [illegible]es, S., and Wells, S.
1976 Cost Analysis for Educational Planning and Evaluation: Methodology and Application to Instructional Technology. Educational Testing Service, Princeton, New Jersey.

Joint Economic Committee, United States Congress.
1973 Benefit-Cost Analyses of Federal Programs: A Compendium of Papers. Washington, D. C.: U. S. Government Printing Office.

La Belle, T.
1976 Goals and Strategies of Nonformal Education in Latin America. Comparative Education Review, 3: 328-45.

Layard, R. (Ed.)
1972 Cost-Benefit Analysis. London: Penguin.

Little, I. and Mirrlees, J.
1969 Manual of Industrial Project Analysis in Developing Countries, Vol II. Paris: OECD.

Lockheed, M., Young, K., Emery, J., and Summerskill, J.
1977 State-of-the-Arts Paper: Cost Analysis in Nonformal Education. Educational Testing Service, Princeton, New Jersey.

Mishan, E. J.
1975 Economics for Social Decisions: Elements of Cost-Benefit Analysis. New York: Praeger.

Prest, A. and Turvey, R.
1965 Cost-Benefit Analysis: A Survey. Economic Journal, 300: 683-735.

Psacharopolus, G.
1972 Returns to Education: An International Comparison. Amsterdam: Elsevier.

Rivlin, A.
1971 Systematic Thought for Social Action. Washington, D. C.: The Brookings Institution.

Roemer, M. and Stern, J.
1975 The Appraisal of Development Projects: A Practical Guide to Project Analysis with Case Studies and Solutions. New York: Praeger.

Sheffield, J. and Diejomah, V.
1972 Non-Formal Education in African Development. New York: African-American Institute.

Squire, L. and van der Tak, H.
1975 Economic Analysis of Projects. Baltimore: Johns Hopkins University Press.

Thias, H. and Carnoy, M.
1972 Cost-Benefit Analysis in Education: A Case Study of Kenya. Washington, D. C.: IBRD.

Vaizey, J. and Chesswas, J.
1967 The Costing of Educational Plans. Paris: UNESCO.

Weisbrod, B.
1972 Deriving an Implicit Set of Governmental Weights for Income Classes. In Cost Benefit Analysis. R. Layard (Ed.). London: Penguin.

Wiseman, J.
1965 Cost-Benefit Analysis in Education. Southern Economic Journal, 1: 1-14.

Wood, W. and Campbell, H.
1970 Cost-Benefit Analysis and the Economics of Investment in Human Resources. Kingston: Queens University Industrial Relations Center.

Woodhall, M.
1970 Cost-Benefit Analysis in Educational Planning. Paris: UNESCO.

Zymelman, M.
1976 The Economic Evaluation of Vocational Training Programs. Baltimore: Johns Hopkins University Press.