# TRENDS AND ISSUES IN THE
# ECONOMICS OF NON-FORMAL EDUCATION

A Dissertation
for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
Abdul Mannan
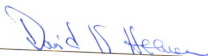1973

This is to certify that the

thesis entitled

Trends and Issues in the

Economics of Non-Formal Education

presented by

ABDUL MANNAN

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Education-Economics
(emphasis field: Comparative Education--
Educational Planning--Economics.)

Major professor

Date 8 November 1973

O-7639

sub

thi

non

allo

(1)

conc

and '

marke

since

of th

reinf

encou

flood

has n

growth

educat

formal

featur

interc

ABSTRACT

TRENDS AND ISSUES IN THE ECONOMICS
OF NON-FORMAL EDUCATION

By

Abdul Mannan

The hypothesis to be examined is that non-formal education can substitute for and/or complement formal education. As a matter of fact, this study is an attempt to develop an economic and social theory of non-formal education, hopefully in order to improve the use of resources allocated to education, broadly viewed.

Formal education is examined and found wanting on several grounds: (1) It is too "academic" (i.e., concerned essentially with abstract conceptualization); (2) It results in a "job gap" (i.e., "overeducating" and "underemploying") both before and after participants enter the labor market; (3) Formal education tends to create an "elite" in the society since only a privileged few can afford lengthy school experience because of the age and costs of level correlated education; (4) It frequently reinforces existing social norms which denigrate manual labor; (5) It encourages migration from rural areas to cities where the market is flooded with "educated unemployed"; and (6) Evidently formal schooling has not been able to cope with the situation related to the tremendous growth of school age population.

It is demonstrated that if we can integrate non-formal and formal education, some of the problems arising out of the over-emphasis on formal schooling could be reduced to a significant degree. The main feature of non-formal education is its emphasis on the relevance and interconnection between learning and work experience. Motivation is

ma

sc

inc

for

ear

una

incr

form

of d

tion

A ter

the r

made

ation

are s

catio

specu

itive.

descri

maximized by the link between learning and reward. In the case of formal schooling earning and learning usually do not go together. Thus, the income stream is negative during the years of schooling as a result of foregone income. But in the case of non-formal education, learning and earning may very well go together. In fact, when the learning becomes unavoidable, it involves no marginal or incremental costs incurred for increments of learning.

The substitutabilities and complementarities between non-formal and formal education output are explained with the help of cross-elasticity of demand. The conceptual problem involved in cost and benefit estimation with regard to non-formal vis-a-vis formal education are analyzed. A tentative theoretical framework of analysis is developed indicating the need for planning of the non-formal education sector. Attempts are made to provide policy analysis to facilitate decision making and evaluation.

This study is based on library research. The data and sources used are secondary. Since the literature on the economics of non-formal education is very scarce, considerable dependence was required on intuition, speculation, and experience designed to be inquisitive rather than definitive. Nevertheless, the study should provide the basis for further descriptive, correlational and experimental study.

TRENDS AND ISSUES IN THE

ECONOMICS OF NON-FORMAL EDUCATION


By


Abdul Mannan


A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Secondary Education and Curriculum


1973

To

NARGIS,

RESHMI, AND GHALIB

by

of

dra

tri

for

Cole

Stud

this

K. A.

for h

son r

throu

expre

# ACKNOWLEDGMENTS

TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

SECTION I

## INTRODUCTION

1.  Statement of the Problem: Its Scope and Objectives

2.  Non-Formal Education - Its Definition and Scope

3.  Educators' Perception

4.  Economists' Perception

5.  On Methodology and Assumptions

6.  A Brief Review of Literature

1. <u>S:</u>

T

manpow

cation

this l:

critica

formal

rationa

investm

the que

attenti

formal

in the

Th

usually

reward-

eventua

which r

(Educat

    1.

    2.

    3.

1. Statement of the Problem:  Its Scope and Objectives:

The literature concerning investment in human capital, education, and
manpower planning frequently touches only peripherally on non-formal edu-
cation; occasionally it treats it directly.  After carefully surveying
this literature, it is the purpose of this study to describe and to analyze
critically "the state of the art" in the area of the economics of non-
formal education.  What are its strengths and weaknesses?  What is the
rationale for the emphasis on non-formal education?  On what criteria can
investment decisions in non-formal education be made?  These are among
the questions which will be examined.  This focus purposely excludes prime
attention to sociological, anthropological and political facets of non-
formal education, even though the significance of non-economic factors
in the dynamic setting of development and change is recognized.

The parameter along which the study of education by economists has
usually been designed may be summarized through the use of the concept of
reward—particularly, reward construed as income, either immediately or
eventual.  More specifically, we may discriminate at least three ways in
which reward (income) may be allocated in relation to education.
(Education, in this instance, essentially means employment training.)

1. Reward may be a long-term consequence of non-specific or very
   comprehensive education.  This is the formal schooling model.

2. Reward may be a consequence of short-term, highly specific edu-
   cation.  This model may be called "job-training," recognizing
   that it has several subvarieties.  It may take place before or
   after employment.  It may provide income (below the ultimate
   level) or it may not, and so on.

3. Reward may be co-extensive with education.  This is the on-the-
   job training model.

and i

study

modes

tion

and l

(i.e.,

"gap"

cipien

times

and ru

ages

the ma

more,

school

of for

this

cant

It should be noted that the emphasis here is on deliberate education, and ignores experimental (informal) education. For the most part, this study focuses on a distinction between formal (1) and non-formal (2&3) modes of employment training.

The underlying hypothesis to be examined is that non-formal education can substitute for and/or complement formal education both in more and less developed countries. Formal education is essentially academic (i.e., concerned primarily with abstract conceptualization). An education "gap" results between education and employment before and after the recipient of education enters the job market. Formal education also sometimes reinforces existing social norms such as disdain for manual labor and rural life in general. Formal education, in some countries, encourages migration from rural areas to cities in search for employment where the market is already flooded with the "educated unemployed." Furthermore, formal schooling has not been able to cope with the growth of school-age population. If it can be demonstrated that the integration of formal and non-formal education is possible, it is hypothesized that this integration will reduce the above described problems of a significant degree.

The purposes of the study are:

1. To demonstrate theoretically that non-formal education can substitute for and/or complement formal education.

2. To provide a theoretical analysis for issues such as investment criteria and the strategy of planning non-formal education compared to formal education.

3. To provide policy analysis wherever possible to facilitate decision-making and evaluation.

2. !

educa

educa

proce

T

sider

matter

carrie

Th

foundir

system)

cular t

_____

[1]A

Technic

D.D., O

[2]R

Tiapula

small p

June 8-

p.1-3.

## 2. Non-Formal Education - Its Definition and Scope

Non-formal education is conceptually compared to formal, traditional education which is clear in purpose and means to government planners and educators. Given the formal structure of educational institutions and processes, it is tempting to view non-formal education as a residual.

> ...non-formal education, as currently conceived by AID/ Washington, is a shorthand expression for the constellation of human skill and knowledge development processes which for the most part are external to traditional, formal school curricula. An over-simplified view is that it includes educational train- ing activities which normally are outside of the jurisdiction of ministries of education.[1]

This definition fails to consider the objectives; nor does it con- sider the characteristics of "consciousness" by the imparter or, for that matter, the learner. It is, nonetheless, a beginning. Kleis and others carried this further as follows:[2]

> Non-formal education is any intentional systematic educational enterprise (usually outside of traditional schooling) in which content, media, time units, admission criteria, staff, facili- ties and their system components are selected and/or adapted for particular students, populations, or situations, in order to maximize attainment of the learning mission and minimize mainte- nance of constraints of the system.

This definition is more comprehensive but suffers the fault of con- founding the product (education) with the mechanism (enterprise and system) without being very specific about the latter. It seems in parti- cular to exclude education or learning received in the family situation

---

[1]A draft working paper on non-formal education, AID/Bureau for Technical Assistance. Office of Education and Human Resources, Washington, D.D., October 1, 1970, p.2.

[2]Russell J. Kleis, Charles L. Lang, John R. Mietus and Fia T. S. Tiapula, "Toward a Contextual Definition of Non-Formal Education", a small paper presented before the non-formal education seminar, Gull Lake, June 8-9, 1972. Michigan State University, East Lansing, Michigan 48823, p.1-3.

unless

of the

econom

neighb

separa

A

ceived,

and/or

feeling

non-for

learning

that nor

package

a given

(occurin

outside,

for any

learning

forming"

$N = T - F$

Where N =

T =

F =

I =

R =

Ibid

unless one presumes that the home/family is an "enterprise" and some part of the ill-defined "system". Unless society is entirely regimented, the economics of learning incidental to family living (i.e.,art of speaking, neighborhood living, etc.) is probably not manageable because of the inseparability of both complex inputs and outputs.

Although learning yields "knowledge in the form of cognition (perceived, interpreted, and retained information), competence (intellectual and/or motive (skill) and colition (value, attitude, appreciation or feeling based on preferences for acting or reacting)",[3] a definition of non-formal education need not be so comprehensive as to include all learning other than that attained in formal schooling. Thus, we can say that non-formal education is a conscious effort or an educational policy package within the overall framework of the total educational effort of a given community or state at a particular point or period of time (occuring intra-marginally or marginally in association with, but usually outside, of the formal schools and pre-school family learning situation for any student population, the objective of which is to add to the total learning opportunities available in both "consumption" and "capital forming" areas. Symbolically, non-formal education can be identified as:

$$N = T - F - I - R$$

Where N = Non-formal education (e.g., on-the-job training)

T = Total learning experience

F = Learning associated with formal schools

I = Informal learning at home

R = Residual (learning associated incidentally with exposure to the environment, particularly important but not restricted to childhood)

---

Ibid., p.1-3.

B

utiliz

this s

means

non-for

absent

are clo

greater

motivat

dent.[4]

dealing

Pro

approach

[4]Col
New Strat
for Non-F
Chapter 5

[5]Fre
of Africa
Washington
tional Dev
ed. by Co
D. C. Hea

By "conscious effort", we really mean organization and planning for utilization of resources for out-of-school education. For the purpose of this study, organization and formality of the school system are by no means the same. Organization or planning is needed for both formal and non-formal education. As defined here, formal, traditional schooling is absent in non-formal education. Non-formal education and work experiences are closely related with the former frequently directly contributing to greater skills and higher earnings. Thus it is immediately relevant, motivation is maximized as the link between learning and reward is evident.[4] This is not to suggest that non-formal education should avoid dealing with variables having long-term significance.

Professor Harbison's[5] description is highly pragmatic although he approaches the topic as if non-formal education were a residual:

> Human resource analysis is concerned with two systems of skill and knowledge generation: formal schooling and non-formal education connotes, age-specific, full-time classroom attendance in a linear, graded system geared to certificates, diplomas, degrees, or other formal credentials. Formal education is easily defined. Its administration and control in most developing countries is lodged in a ministry of education; its costs are measurable; and its inputs and outputs are easily identified. In contrast, non-formal education, which is probably best defined as skill and knowledge generation which take place outside the formal schooling system, is a heterogenous conglomeration of unstandardized and seemingly unrelated activities aimed at a wide variety of goals. Non-formal education is the responsibility of no single ministry; its administration and control

[4]Cole S. Brembeck, "The Strategic Uses of Non-Formal Education", in New Strategies for Educational Development: The Cross-Cultural Search for Non-Formal Alternatives, ed. by Cole S. Brembeck and Timothy Thompson, Chapter 5, Lexington, Mass: D.C. Heath and Company, 1973.

[5]Frederick H. Harbison, "Human Resource Approach to the Development of African Nations", American Council on Education, 1 Dupont Circle, Washington, D.C., 20036, p. 11; also appears in New Strategies for Educational Development: The Cross-Cultural Search for Non-Formal Alternatives, ed. by Cole S. Brembeck and Timothy Thompson, Chapter 1, Lexington, Mass.: D. C. Heath and Company, 1973.

But as Ha

it becomes

residual c

of the ski

employed;

youth, for

knowledge,

our main t

illustrati

ices by th

health, la

Befor

educators'

get insigh

[6]Ibid.

[7]See f
Goudreault
unpublished
Lansing, Mi

are widely diffused throughout the private as well as the public
sectors; and its costs, inputs and outputs are not readily
measurable. Non-formal education is, perhaps one of the most
"unsystematic" of all systems, yet in most developing countries
its role in generating skills, influencing attitudes and molding
values is of equal, if not greater, importance than that of
formal schooling. Indeed, perhaps, most of man's development
takes place routinely and often unconsciously through learning-
by-doing, being instructed or inspired by others to perform
specific tasks through association and communication with others
or simply by participation in a community or in a working
environment.

But as Harbison expands his thinking into describing non-formal education,
it becomes evident that his intent is to deal only with that part of the
residual categorized as: 1)"activities oriented primarily to development
of the skill and knowledge of members of the labor force who are already
employed; 2) activities designed primarily to prepare persons, mostly
youth, for entry into employment; 3) activities designed to develop skill,
knowledge, and understanding which transcend the work world."[6] Since
our main thrust is on the economic aspects of non-formal education, an
illustrative "check-list"[7] of action orientated non-formal education serv-
ices by the various sectors of the economy such as agriculture, industry,
health, labor and social welfare, etc., is helpful.

Before discussing economists' perceptions, it is useful to highlight
educators' views of formal as opposed to non-formal education in order to
get insight into the problem.

---

[6]Ibid. Chapter 1.

[7]See footnote no. 1, and also see John M. Hunter and Fernand L.
Goudreault, "An approach to Inventorying Non-Formal Education", an
unpublished paper prepared for IISE, Michigan State University, East
Lansing, Michigan 48823.

3. Educ

The

on the q

continuou

for this

Brembeck

know ther

ing, howe

provided

to the ex

therefore

few years

that the

cates a

From the

essentia

ience sh

more tan

sumption

educatio

the non-

Dis

## 3. Educators' Perception

There are at least two distinct schools of thought among educators on the question of schooling. One argues that learning is a life-long, continuous process. Both formal and non-formal learning styles, co-exist for this group. A great majority of educators such as Havighurst, Brembeck, and Adams hold this view. To them, "historically schools as we know them are relatively newcomers on the human scene. The act of learning, however, is as old as man himself. The human environment has always provided the stuff of learning, and the continuity of culture testifies to the effectiveness with which men learn from one another."[8] The need, therefore, is to see learning in terms of life spans rather than just a few years attendance in a school. Another group of educators argues that the current emphasis on the highly structured formal schooling indicates a serious lack of an organized search for non-formal alternatives. From the standpoint of the allocation of resources, controversy exists essentially between investment in man and investment in machines. Experience shows that often the latter wins, because the return is quicker, more tangible, less risky, and for machines there is little of the consumption-investment confusion. Whatever resources are allocated to education in both advanced and LDC's, most go to formal education and the non-formal segment remains neglected.

Disillusioned with the structured formal schools, writers such as

---

From the introduction of the book, New Strategies for Educational Development: The Cross-Cultural Search for Non-Formal Alternatives, ed. by Cole S. Brembeck and Timothy Thompson, Lexington, Mass.: D.C. Heath and Company, 1973. p.3.

Illich

Illich

the pu

compet

value,

the in

ity -

school

legal

of pr

match

instr

skill

which

that

velo

with

to b

sed

rea

ati

not

pec

———

Rou

ana

Illich[9] and Reimer[10] advocate "deschooling" the society. According to Illich, schooling as opposed to education has become the modern dogma; the pupil is schooled to confuse teaching with learning, a diploma with competence. "His imagination is schooled to accept service in place of value, medical treatment is mistaken for health care, social work for the improvement of community life, policy protection for national security - - - not only education but social reality has itself become schooled."[11] His suggestions for reform are also radical. They include legal abolition of schools; prohibition of discrimination of the basis of prior schooling; creation of a "bank" for skill exchange and peer-matching by which the learned share their knowledge with those seeking instruction; institutionalization of skill exchange by creating free skill centers open to the public; consultancy by elders with regard to which skill to learn, which method to use, etc. Further, he suggests that proper planning, incentives, coupled with a network, should be developed to start not with the question, "what should someone learn?" but with the question, "what kinds of things and people might learners want to be in contact with in order to learn?" A similar sentiment is expressed by E. Reimer, in his book School Is Dead. He advances four main reasons for abolishing schools. First, schools create social discrimination. UNESCO data indicate that most of the children in the world are not in schools. No country in the world can afford the education its people want. Then, it follows that discrimination arises in providing

---

[9]E. Illich, The De-Schooling   Society, New York:  Harper and Row, 1970.

[10]R. E. Reimer, School Is Dead, Garden City, New York:  Doubleday and Company, 1971, Chapter 1, pp. 21-30.

[11]Illich, op. cit. - cover page

schooli

equalit

general

of scho

taxes t

"In Bol

are spe

on the

three h

situati

faction

never s

learnec

moving

of the

custom

requir

societ

status

conclu

in the

schol

chanc

appro

schooling for some but not for others.  <u>Second,</u> school increases in-
equality in the distribution of income because it is the privileged who
generally go to school longer and because costs increase with the level
of schooling.  Furthermore, schools are supported largely by general
taxes that fall more upon the poor than their direct incidence suggests.
"In Bolivia, for example, one half of all public allocations for schools
are spent on 1% of the population.  The ratio of educational expenditures
on the upper and lower tenths of the population respectively, are about
three hundred to one.  Most parts of the world are nearer to the Bolivian"[12]
situation.  <u>Third,</u> a little schooling can induce a great deal of dissatis-
faction.  In 1960, half the children who entered school in Latin America
never started the second grade.  Three-fourths dropped out before they
learned to read.  Going to school means leaving the traditional life,
moving to a different place, laying aside physical burdens for the work
of the tongue and the mind, exchanging traditional food, clothing and
customs for those of the larger town or distant city.  <u>Last,</u> school
requires conformity and has become the universal church of technological
society, incorporating and transmitting its ideology and conferring social
status in proportion to its acceptance by the people involved.  Reimer
concludes by saying that "the major threat today is a world-wide monopoly
in the domination of man's mind.  We need effective prohibition of a
scholastic monopoly, not only of educational resources but of the life
chance of individuals."[13]

These criticisms of formalized and highly structured schools are
appropriate.  Perhaps, consciously or unconsciously, through its monopoly

---

[12]R. E. Reimer, <u>op</u>. <u>cit</u>., p. 25.

[13]<u>Ibid</u>., p. 30.

on educ

maintai

ment of

case is

stituta

suggest

mean, i

tion wi

the ric

Secondl

ity in

efficie

reintro

diversi

then, t

the po

bold p

antith

an opt

educa

Worth

on education, elements of societies are using the school system to maintain the barriers between 'have' and 'have-nots'. But dismemberment of the school as an institution does not necessarily follow. The case is over-stated and certainly ignores the complementarity and substitutability between formal schooling and non-formal education. The suggestion for creation of a "skill bank" through an organization may mean, in its ultimate analysis, a sort of formalization. Again, education without school may well create social discrimination, because it is the rich who will be in position to employ tutors for their children. Secondly, they seem to ignore the interrelation of efficiency and conformity in a modern complex society. The loss to society in its search for efficiency in learning is some degree of diversity - presumably to be reintroduced by non-formal education. There is a "trade-off" between diversity and efficiency, and both are values worth seeking. The need, then, is to see learning in terms of total learning experience, in which the potentials of formal and non-formal education are recognized. The bold provocative thought on "de-schooling" society provides a powerful antithesis to formal schooling, but what may be needed is a synthesis -- an optimum educational mix.

> ...the contrast between advocates and critics of de-schooling is a contrast in philosophies of life more than a clash between those who want schools and those who do not. There are those of us who advocate trust in man, the fostering of diversity, a belief in man's innate curiosity, and propensity for risky and unpredictable change. And, there are others of us who advocate trust in institutions, the development of more efficient schools, a belief that man needs external motivation and predilection for planned rational controlled change. [14]

This brings us to the discussion of economists' view of non-formal education.

---

[14]R. J. Havighurst and D. U. Levine eds., Farewell to Schools?? Worthington, Ohio: C.A. Jones Publishing Company, 1971, p. 82.

4. Ec

T

levels

be con

of the

be).

inputs

attenti

the-job

in a pa

with th

to nati

At

level.

on prob

stated

foremer

this le

another

T

cerned

genous

charac

financ

e.g.,

in terr

latitud

dependi

## 4. Economists' Perception

The economist can view non-formal education from at least three levels and can approach the problem arising at each level. First, he may be concerned with the aggregate or "macro" level. This implies the study of the complete, integrated system of non-formal education (if such there be). In this case, main elements are the total number of educational inputs such as total student population, availability of funds, etc. No attention is paid to what happens to a particular program relating to on-the-job training or the psychological processes of the students involved in a particular program. Thus, at macro level, economists are concerned with the appropriate level of investment in human capital as it relates to national manpower needs.

At the other extreme is the disaggregated, segmental or "micro" level. It concentrates on analysis of individual programs or institutions, on problems concerning the effectiveness of expenditures in reaching stated (hopefully) objectives. The "return" from a training program for foremen in a particular factory is an example of the sort of concerns in this level of perception. This, incidentally, very closely resembles another academic box, viz., "administration".

The third perception is intermediate in the sense that it is concerned with less than the aggregate but is concerned with sets of homogenous elements of the micro universe. For some purposes, the binding characteristics might be the nature of the supplier – e.g., privately financing of non-formal education. Or it might be functionally defined, e.g., literacy training regardless of supplier. Or, it might be defined in terms of the user, e.g., programs for business. There is considerable latitude in this category for definition of particular sets of programs depending on the interests and needs.

Th

permit

of diff

one of

non-for

theme a

of wise

problem

in agri

investm

ation.

Wi

educati

discuss

educati

5. On

Th

ployed

and eco

correla

study s

formal

describ

Th

and jou

tions

These three categories are reasonably clear and distinct and they permit different kinds of analyses to be brought to bear and the asking of different questions. Basically, though, the fundamental problem is one of the scarcity of real resources within non-formal education and for non-formal education in competition with other activities. The central theme at all levels is that fundamental to most of economics: the problem of wise allocation of scarce resources and their proper management. The problem is just as real in the area of education and training as it is in agriculture, industry, public utilities. But because of the nature of investment in human capital, it presents a more complex problem of evaluation.

With this brief introduction of economists' perceptions of non-formal education, we turn to a discussion of method of analysis. Then we shall discuss the rationale of an economic and social theory of non-formal education.

## 5. On Methodology and Assumptions

The term "methodology" refers to the techniques and procedures employed in the construction and verification of the relevant educational and economic principles. In passing, this study does not attempt to test correlational or experimental hypotheses of human interaction. But the study seeks to develop an economic and social theory applicable to non-formal education thereby providing modes of conceptualization for seeking, describing, and explaining empirical data.

The data and sources used are secondary. The main sources are books and journals on economics and education; government documents; publications of UNESCO and OECD; occasional research papers of various U.S.

research

Michigan

A ca

of non-fo

conceptua

oped in t

formal ed

Theory is

ever poss

or induct

occurence

Ther

Intuition

the text

With this

general h

Met<u>h</u>

As f

applying

empirical

between d

stated by

By

gene

W:
Crofts,

research centers; and some unpublished papers mainly by professors of
Michigan State University.

A careful review of the existing scanty literature on the economics
of non-formal education provided a starting point for data analysis and
conceptual frameworks from which theories are generated. Theories devel-
oped in this study are specific, sharply focused on the area of non-
formal education, and they are not intended to have wider applicability.
Theory is expressed by a series of statements supported by evidence when-
ever possible. This evidence is organized either by applying the deductive
or inductive method of analysis and is not verified by frequence of
occurence.

There is little literature on the economics of non-formal education.
Intuition, speculation, and experience supplement this literature, and
the text is in part expected to be inquisitive rather than definitive.
With this general observation, the underlying logic follows under the
general headings: method of analysis..

### Method of Analysis:

As for method of analysis, the research can be conducted either by
applying the analytical or deductive technique of analysis or by the
empirical or inductive method of inquiry. The major point of difference
between deduction and induction from the viewpoint of logic are well
stated by Gee[15]:

By deduction in logic is meant reasoning or inference from the

general to the particular, or from the universal to the individual.

---

Wilson Gee, _Social Science Research Methods_, Appleton-Century-
Crofts, New York, 1950, p. 206.

St

fr

pr

ge

Th

relativ

economi

empiric

inducti

each st

ly.  Bu

That is

forcing

I

For ex

steps

from g

verifi

and q

This

---

Conn

1940

Hom

Still more specifically deductive inference signifies reasoning

from given premises to their necessary conclusion. Induction is the

process of reasoning from a part to the whole, from particulars to

generals, or from the individuals to the universal.

There is some disagreement among economists and educators over the

relative merits of the two methods. One group feels that no aspect of

economic theory is amendable to verification or refutation on purely

empirical grounds.[16] But economists like Colin Clark[17] argue that the

inductive method is the only scientific method of analysis and that at

each step in a chain of analysis economic theory must be proved empirical-

ly. But "the tenor of present thinking is that they are complementary.

That is to say that, deductive and statistical methods are mutually rein-

forcing."[18]

I have adopted both the deductive and inductive method of analysis.

For example, the deductive method requires application of three major

steps such as (a) postulating of assumptions (b) deduction of reasoning

from given premises to their necessary conclusion (c) the testing or

verification of these conclusions against observed facts.

The main assumptions underlying the study are as follows:

(1) Current formal schooling is not capable of producing all types

and quantities of educational output a modern society or economy needs.

This can be treated either as an assumption or as an hypothesis to be

---

[16]Ludwig Von Mises, Human Action, Yale University Press, New Haven, Conn. 1959.

[17]Colin Clark, The Conditions of Economic Progress, Macmillan, London, 1940, vii-viii.

[18]C. E. Ferguson, Micro-Economic Theory, Richard D. Train, Inc., Homewood, Illinois, 1969, p. 5.

tested

school

"by as

2

educat

nal an

though

differe

school

altoge

on-the-

to for

tion i

part b

anxiet

a par

serves

3

which

periph

ment c

exogen

---

1

infere

much a

called

betwee

may ma

tested. Here it is an assumption. Assuming the adequacy of formal

schooling would have made concern with non-formal education unnecessary

"by assumption."

2) The different learning environments of formal and non-formal

education can co-exist in a society - a society which is <u>neutral</u> to for-

mal and non-formal learning styles. Non-formal education is usually

thought of in terms of the delivery system, but it can also provide a

different learning style. A formal, structured, and graded system of

schooling tends to produce a kind of learning atmosphere which may be

altogether absent in many non-formal education situations (e.g., learning

on-the-job). Societies, of course, generally are <u>not</u> neutral with respect

to formal and non-formal educational modes. As a matter of fact, educa-

tion in both the Western and non-Western world is highly structured in

part because of the "diploma mentality." And because of uncertainty,

anxiety, and social rigidity, non-formal education is not considered on

a par with formal education. This assumption simplifies the analysis and

serves to stimulate examination of the roles of non-formal education.

3) Another important assumption is that "other things being equal",

which is a common device of economists. Conclusions can be deduced when

peripheral variables are held constant. Generally the theoretical argu-

ment contains parameters[19] or data which are taken as fixed; it contains

exogeneous variables values of which are determined outside the system,

---

[19]In statistics we are concerned mainly with the question of making
inferences about a population based on data contained in a sample. In as
much as population are characterized by numberical descriptive measures
called parameters such as, the mean, the standard deviation, or the area
between two values of the variable...Given the value of the parameter, we
may make decisions or maybe required to estimate the value of the parameter.

and

by le

educa

at th

forma

Altho

"cont

sis w

"chec

educat

really

there

6. A

T

general

ucators

works o

and it also contains endogenous variables[20] values of which are implied by learning situations.

Again a number of relationships is considered such as those between education and employment, between demand for and supply of skills both at the micro- and macro-levels. I have deduced the conclusion that non-formal education can be an effective alternative to formal education. Although this broad conclusion has not been verified by conducting a "controlled experiment" yet I tried to adopt an inductive method of analysis wherever possible. This generalization is also tested - or at least "checked" - against whatever secondary data there is.

4) Finally, since resources are limited, the amounts and kinds of education to be provided are substantial public policy issues. This is really the heart of the matter and is in opposition to assumptions that there are no limits on education which should be socially provided.

## 6.  A Brief Review of Literature:

The recent surge of interest in non-formal education reflects the general concern of both educators and economists. As stated earlier, educators are sharply divided on the whole question of schooling. The works of educators such as Havighurst, Levine, Curle Adams, Don Adams,

---

[20]A variable is defined here as a value that is subject to change. A variable is a number usually symbolized by a letter such as x, y, z, etc. (e.g. in the case of non-formal education variables may be $x_1$= parents' income, $x_2$= parents' occupation, $x_3$= density of the population and so on.) Independent variables may be qualitative, e.g. "foreman" in a study of variables affecting yield in a manufacturing production study. The variables may be exogeneous (i.e. having its origin external to the education system) such as student population growth, governmental activity, location, etc. The variables may be endogenous which are to be determined by the operation of the educational system such as wages of the worker, receiving training on-the-job, employment prospects of persons receiving non-formal education and so on.

are inc

modes

and Rei

schools

jobs,

Ea

educat

diffic

involv

cently

A

greatl

econom

Bowman

ment

and De

educa

tion',

tivit

to im

educa

This

withi

_____

Educa
Mimeo

Educa

are indicative of the fact that learning through formal and non-formal modes may co-exist side by side. Another group of educators, e.g., Illich and Reimer advocate the complete abolition of schools on the grounds that schools are discriminatory, irrelevant to preparation of actual life and jobs, that they seek to maintain an elite control in society.

Economists, however, favor the idea that both formal and non-formal education can be a source of supply of skill in the market. Despite the difficulty of isolating investment from consumption and other problems involved in the complete acceptance of the human capital concept until recently, the work of T. W. Schultz is the pioneering work in this field.

Although the literature on the economics of formal education has greatly increased in the last decade, very little has been done with the economics of non-formal education. The several works of Harbison, Myers, Bowman, Eli Ginzberg and others have shown that human resource development is possible through both formal and non-formal education. Solow[21] and Denison[22] have estimated the role of education (particularly formal education) by measuring the aggregate gains in the productivity of a nation's labor force. They hold the view that the improvements in productivity which are not due to an increase capital goods stock must be due to improvement in the quality of labor force. They conclude that formal education is the main reason for this improvement in labor's quality. This conclusion is based on the assumption that earnings differentials within the working force are due to differences in formal education which

---

[21]See Hans Thias and Martin Carnoy, Cost Benefit Analysis in Education A Case Study on Kenya, Washington, D. C.: World Bank, NDEC 173, Mimeo, 1969.

[22]See C.R.S. Dougherty, "The Optional Allocation of Investment in Education," Development Advisory Service, Harvard University, April 1969.

is, at

on the

non-for

Th

attenti

the per

formal

vide us

trainin

that wo

that th

to disc

the tim

Th

nature

be solv

Ma

job tra

constit

of seni

trainin

Machlup

---

23

Interna

24

United

is, at best, only partially true. Skills have historically been acquired on the job, and formal schooling simply arose out of the experience of non-formal learning.

The value of on-the-job training, has not, however, received much attention from the economists. Some studies[23] have been made to calculate the period of on-the-job training indirectly by deducting pre-school and formal school attendance period from the worker's age. This does not provide us with any useful information on the measurement of on-the-job training as it is based on some faulty assumptions. First, it assumes that workers join the labor force immediately on getting out of school and that they continuously remain in training. Second, no attempt is made to discount the time likely to be spent due to frictional unemployment or the time used by the workers for pure consumption (i.e., leisure) purposes.

The importance of the on-the-job training poses problems of a serious nature for economists dealing with education. These problems are yet to be solved.

Machlup[24] identified three types of on-the-job training: (a) on-the-job training from experience, some of which is unavoidable and does not constitute training, (b) on-the-job training under the guidance and care of senior workers in the same line of production and (c) off-the-job training which involves the provision of classroom inside the factories. Machlup's concept of on-the-job training which forms a significant part

---

[23]K. Nohko, F. et. al., Educational Planning in the USSR, Paris: International Institute of Educational Planning, UNESCO, 1968.

[24]F. Machlup, The Production and Distribution of Knowledge in the United States, Princeton University Press, 1962.

of no

1

educat

mobil:

work

tial t

S

firm

sibili

C

specif

sides

finds

(inter

Again,

will h

define

that

market

becaus

"full

can be

that

train:

2

sis w

Econor

tal: A

(Supp]

of non formal education seems to be too narrow, for two reasons:

First, the unavoidable job experience should be treated as non-formal education. He did, of course, recognize fully the significance of labor mobility associated with the experience of the worker. Furthermore, the work experience tends to increase the employment and the earnings potential to family heads.

Second, off-the-job training can be arranged either by a particular firm or by the industry as a whole. In this regard there exists the possibility of such training both vertically and horizontally.

Gary Becker[25] discusses two types of on-the-job training: general and specific. According to him "general training is useful in many firms besides those providing for it; for example, a machinist trained in the army finds his skill of value in steel and aircraft firms and a doctor trained (interned) at one hospital finds his skills useful at other hospitals." Again, "training that increases productivity more in firms providing it will be called specific training. Completely specific training can be defined as training that has no effect on the productivity of trainees that would be useful in other firms." Becker argues that in competitive markets employees pay all the costs of their general training on the job because they receive lower wages than they would be able to earn working "full time" (i.e.,without training time) at another job. Becker's theory can be criticized on the following four grounds: It appears, however, that the firm which arranges the training also bears the cost of this training in that this training may be utilized by other firms. In other

---

[25]Gary S. Becker, Human Capital: A theorectical and empirical analysis with special reference to education, New York: National Bureau of Economic Research, 1964: also see his article, "Investment in Human Capital: A Theoretical Analysis" in Journal of Political Economy, LXX (Supplement, August, 1962).

words

borne

going

place

analy

job t

ing f

exper

viewp

tend

of ma

that

---

margi
ment
sider
tures
on th
iture
margi
this
follo

Clearl
strean

2
Review

words, the expenditures on training (whether or not they actually are borne by the labor force) generate economies external to the firm.[26]

Second, it is implicit in his analysis that general training is going to be a more important phenomenon than specific training. The good place to receive general kinds of training is the formal school. This analysis suggests at least "one force favoring the transfer from on-the-job training to attending school.[27]

Third, Becker's neat distinction between specific and general training ignores the possibilities of unavoidable "learning by looking" and experience. This aspect of labor training is significant both from the viewpoint of mobility and quality of the products. Job experience may tend to increase labor mobility. Further, the firm can measure the cost of maintaining the experience and inexperienced worker, it is conceivable that firm could measure the quality of their outputs.

---

[26]In economics, a profit maximizing firm is in equilibrium when marginal receipts are equal to marginal expenditure. But once the element of on-the-job training is introduced, the time factor has to be considered. Because there might be inequality between receipts and expenditures in the short run, but firm may find worthwhile to impart training on the job, if "future receipts were sufficiently raised or future expenditures are sufficiently lowered" so as to bring out an equilibrium between marginal products and wages in the long run. In symbols, Becker stated this equality between present values of receipts and expenditures as follows:

$$\sum_{t=o}^{n-1} \frac{R1}{(1+i)^{t+1}} = \sum_{t=o}^{n-1} \frac{Et}{(1+i)^{t1}}$$

where Et and Rt represents expenditures and receipts during period
T + 1= the market discount ratio, "n" represents the no. of periods.

Clearly the equation states that the present value of marginal products stream would have to equal to the present value of the wage stream.

[27]T. S. Schultz, "Investment in Human Capital", *American Economic Review*, vol. 51, 1961.

a sp

mand

his

that

that

worl

perf

paid

Never

econ

fring

betwe

clear

a rap

speci

Balti

Compar
the E

Lastly, Becker's analysis of specific training for a specific job in a specific industry causes some difficulty. Even in equilibrium where demand for and supply of skilled personnel are equal, and employee can quit his job or be fired, thereby disturbing the equilibrium. This suggests that there is a zone of bargaining which is not explored by Becker. "All that needs to be assumed to make Becker's theory applicable to the real world is that (a) general trainees are paid less than the going rate for performing same skilled task and that (b) specific trainees tend to be paid above the going rate in the firm providing specific training."[28] Nevertheless, his analysis is powerful enough to undertake meaningful economic studies of labor training, wage determination, labor contracts, fringe benefits, etc., Mary Jean Bowman commented on the Becker studies:

> There are many imperfections in their work, but it nevertheless is an important beginning indeed, it may prove to be a critical breakthrough in the development of tools for analysis of the roles on on-the-job training and ultimately also for broader comparisons among societies that differ substantially in their educational and training systems. When all this is said, the fact remains, nevertheless, that the economist alone is not likely to get into the intensive analysis of variations in the roles and efficiency of differing kinds of schooling and their relation to on-the-job training that are of vital interest to many educators.[29]

Another point which needs further clarification concerns the choice between the two types of on-the-job training: general and specific. A clear cut answer to this question of choice may not be possible. But in a rapidly changing technological society such as the U.S., emphasis on specific types of on-the-job training is not recommended. More and more

---

[28]Mark Blaug, An Introduction to the Economics of Education, Penguin, Baltimore, U.S.A. 1972, p. 193

Mary Jean Bowman, "Converging Concerns of Economists and Educators," Comparative Education Review, October, 1962, reprinted in Education and the Economics of Human Capital ed. R. A. Wykstra, op. cit. p.65.

empha

a pro

a com

howev

incen

analy

fects

are o

in Sec

with

and r

emphasis should be given to a general type of on-the-job training. But a problem arises. Why would firms train people on the job for others in a competitive market economy? The manpower implications of such training, however, call for social intervention by the state in the form of tax incentives, and other fiscal, and monetary incentives.

Lastly, Jacob Mincer tried to develop theoretical and empirical analyses of education and on-the-job training with emphasis on their effects on earnings, employment, return and other economic variables which are only a segment of the non-formal education. This has been expanded in Section IV where his works have been examined in some detail along with the works of Borus and others on cost-benefit analysis on training and re-training the unemployed.

## SECTION II

## TOWARDS AN ECONOMIC AND SOCIAL THEORY OF NON-FORMAL EDUCATION

1. Implications of Non-Formal Education
   a. Job Gap - Education and Employment
   b. Efficiency Gap
   c. Demand/Supply Gap
   d. Population and Cost Gap
   e. Wage Gap
   f. Equity Gap
   g. Adaptability Gap
   h. Evaluation Gap
   i. Expectation Gap

2. Policy Implications for Non-Formal Education

3. Summary and Conclusions

N

conver

its fu

chosen

a
b
c
d
e
f
g
h
i

Job g

ficant

employ

market

for r

making

tion

of no

to a

and k

unpla

micro

betwe

by a

1.  Implications of Non-Formal Education

Non-formal education can do many things, fill many holes. It is convenient to approach understanding it and its implications by describing its functions in terms of various deficiencies or deficits or what I have chosen to call "gaps". These inter-related gaps are the following:

a.  job gap
b.  efficiency gap
c.  demand/supply gap
d.  population and cost gap
e.  wage gap
f.  equity gap
g.  adaptibility gap
h.  evaluation gap
i.  expectation gap

Job gap. Non-formal education, if properly planned, can play a significant role in reducing the job gap - a gap caused by education outrunning employment for both the employed and those who are yet to be in the labor market. In Bangladesh, for example, non-formal education might be used for retraining the over-educated unemployed/underemployed to the end of making more people employable. In such circumstances, non-formal education may be an alternative or complement to formal education. This aspect of non-formal education is discussed both theoretically and empirically.

Theoretically, non-formal education could fill the educational gap to a large extent. It is argued that formal schooling is producing skills and knowledge which are not job specific. This is particularly true in unplanned economies.

The education gap as demonstrated in Figure-1 may be seen from the micro-view point. We are depicting here an hypothesized relationship between the skill of an individual worker and job qualifications required by a typical firm in a changing economy.

Acquired skil
given in ter
of time or ye
of schooling)

Figure-1

Here X

Y

A

P

EE

SS

R

KLRM

Acquired skills
(given in terms
of time or years
of schooling)

Job requirement curve

Non-formal Education

gap
substitutes
seen as investment

gap
complements
seen as
investment

gap
complements seen as
pure consumption

Open Zone

Time

(Skill Curve)
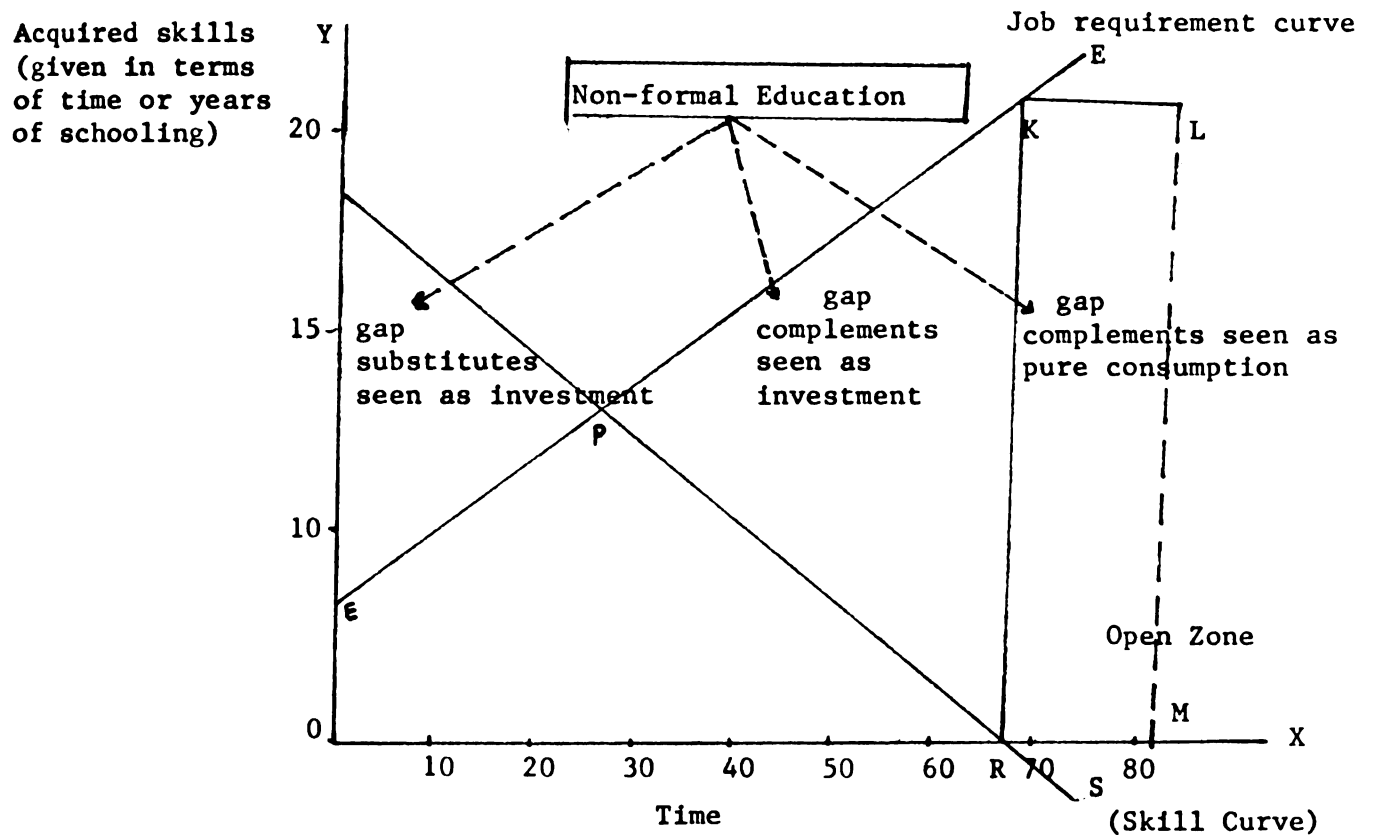
Figure-1  Hypothesized relationship between job and skill from micro
viewpoint

Here X axis represents chronological time in which society is experi-
encing social-economic development;

Y axis represents acquired skill at a particular point of time
assumed to be given: not to be changed by any kind of educational
programs - formal or non-formal;

At time 0, the economy is under-developed;

P shows equality between skill and job

EE represents job requirement curve as economy develops job require-
ments develop; there is a need for increasing technical know-how
for a firm;

SS represents skills which tend to become obsolete over time if no
effort is made to up-date the skills by the individual;

R shows arbitrary retirement age (e.g.,65 years);

KLRM shows open zone after retirement.

Th

because

oping s

for ski

ferenti

is show

more sk

workers

by the

It

temptin

to be a

several

dentall

the two

No

up the

curricu

trainin

through

ing on

job and

source

adapted

gap" in

1,

Human

New Yo

The reason why job requirement curve (EE) is positively sloped, because the job requirements of a technological society or of a developing society tends to increase through time because of a higher demand for skills or because of the increasing complexity, sophistication, differentiation, and standardization of the product. The skill curve (SS) is shown negatively sloped, because educated workers initially may have more skill than the job requires. (i.e., gap left of P) the individual workers may not keep pace with the demand for skill actually required by the firm over time.

It is assumed here that the individual worker concerned is not attempting to up-date his skills through non-formal education. This seems to be a realistic assumption supported by the fact that the U.S. has several times undertaken re-training and skill up-dating programs. Incidentally, even if one postulates no loss of skill (i.e., SS is horizontal), the two gaps described remain although their sizes are smaller.

Non-formal education may be an alternative or substitute in filling up the gap to the left of P. Perhaps, persons produced under a graded curriculum in formal schooling are too highly qualified. Possibly, the training of craftsmen for modern sector activity can be carried out either through apprenticeship arrangements or by some less formal means of learning on the job. "Substitutabilities between vocational training on the job and in-school are not as extensive as is often assumed. This is the source of many fallacious educational recommendations. Schools are well adapted to prepare men to be able to learn on the job."[1] "Filling the gap" in this sense means utilizing resources used for producing redundant

---

[1]M. J. Bowman, "Perspectives in Education and Development" in Human Capital Formation and Manpower Development, (ed.) by R. A. Wykstra, New York, 10022, The Free Press, 1971, pp. 425-34.

skills t

is a con

educatio

Nor

educatio

ment of

service-

governme

faciliti

As Kenne

opment :

gies, an

physical

in disre

disregar

efficien

ignoran

No

gap of

Since e

sense,

Ev

to conc

particu

skills to produce more appropriate ones. Despite the fact that education is a complex social product, here education expenditures for non-formal education are seen as investments.

Non-formal education can largely serve as a complement in filling the educational gap to the right of P. The category of program for development of employed manpower would include various activities such as in-service-training in manufacturing, construction, government and semi-government agencies, agricultural extension to rural areas, increasing facilities for "learning by doing." This is also seen as an investment. As Kenneth Arrow argued in his "Learning by Doing," "human resource development is a function of the stimulus of continuously changing technologies, and these are associated in turn with gross rates of investment in physical capital." Mary Jean Bowman also argued that "strategies developed in disregard of what exists and might be done outside school doors are disregarding important complementaries and are not likely to be the most efficient. This is not just a matter of curriculum adaptations. Our ignorance is great here but there is also much unused knowledge."[2]

Non-formal education can also serve as a complement in filling the gap of Open Zone which refers to the period of life after retirement. Since educational expenditure is not strictly productive in the economic sense, this is seen as pure consumption expenditure.

Even if we look at the problem from a macro viewpoint it is possible to conceive of the gaps between the demand for and supply of skills particularly in the LDCs. This is demonstrated graphically as follows:

---

[2]Ibid. Arrow is paraphrased by Bowman, p. 431.

Skills o
Knowledg
(given)

Figure-2

In

tion rep

More ski

ing to t

tual.  T

quantity

ment (AP

through

quality.

Eve

schoolin

quiremen

aspects

tional g

Skills or
Knowledge
(given)

Degree of development over time
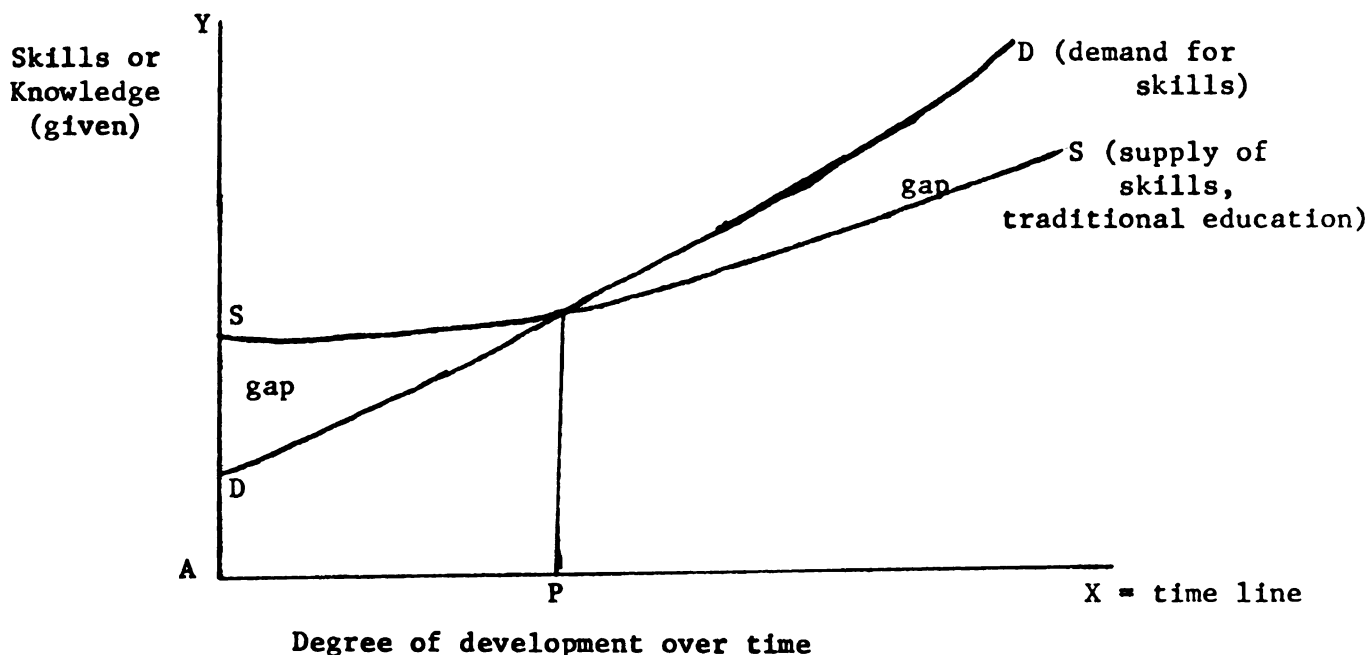
**Figure-2**  Hypothesized relationship between demand for and supply of skills from macro viewpoint.

In some situations, particularly in the Far East, we see the situation represented to the left of AP where the educational gap is "positive". More skills are provided by the educational system than are required, leading to the curious and dangerous phenomenon of the "unemployed" intellectual. This is, it will be noted, a problem of quality rather than one of quantity in terms of the skills produced. Beyond some levels of development (AP), the demands for skills become greater than that provided through the traditional style. This may be a matter of both quantity and quality.

Even if we consider a planned economy such as the U.S.S.R. where schooling in its broad sense should discharge a flow according to job requirements, the understanding of the complementary and substitutability aspects of non-formal education are important simply because the educational gap is bound to develop beyond a certain point as is shown below:

Figure-

In

mained

created

economy

plan wh

for fiv

in the

because

time (s

to up-d

retirem

Un

to unde

allocat

substit

non-for

formal

mand fo

the pos
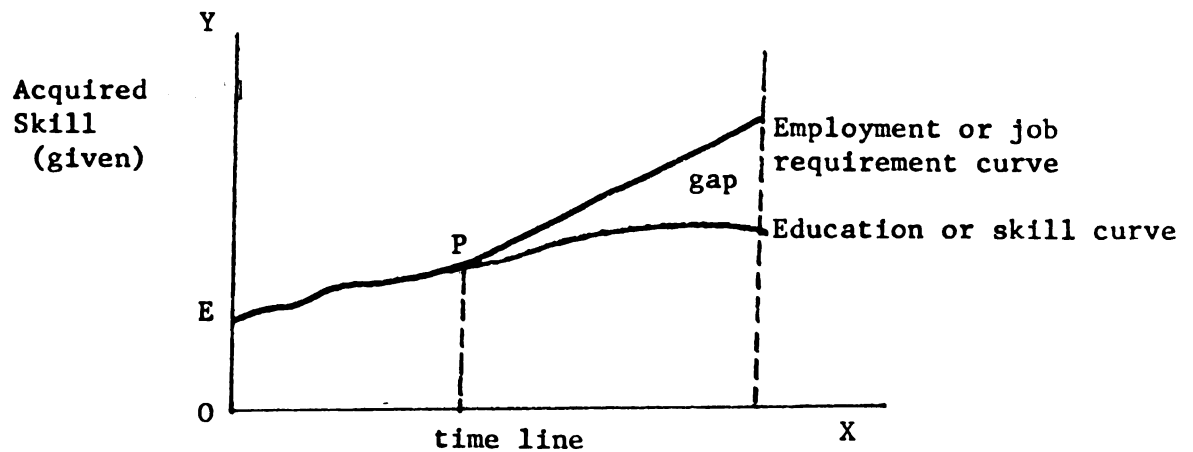
Figure-3 Hypothesized relationship between education and employment in
a planned economy.

In the above figure, both the education and employment curves re-
mained one and the same up to the point P after that a gap has been

created between education and employment. The reason is that in a planned

economy, formal schooling was in a position to establish a link with the

plan which is usually drawn in terms of five years. Even if this plan

for five years is drawn within the perspective of twenty years as we find

in the case of Pakistan, the educational gap is still likely to emerge

because a specialist is likely to use his skill over a long period of

time (say, 30 to 35 years). If he does not systematically make an effort

to up-date this skill, it is likely to be obsolete by the time of his

retirement. Evidently there is an implication for non-formal education.

Understanding these aspects of non-formal education will enable us

to understand the price mechanisms, elasticity of demand, and resource

allocation. When non-formal educational programs are an alternative or

substitute source of skills saleable in the job market, the demand for

non-formal education will increase, if the price of education through

formal schooling (ceteris paribus) increases. This increase in the de-

mand for non-formal educational output will be greater, the greater are

the possibilities of substitution between educational output produced by

formal a

substitu

put prod

substitu

an incre

rise in

But

duced ar

lead to

envelopes

The measu

so far as

ty of dem

the deman

change fo

cross ela

cate the

output.

substitut

it can he

_____

$^{3}$Ela

variable

modity x

the cross

$$\frac{Q}{Q}$$
$$\frac{P}{P}$$

where $\Delta$ =

demanded c

formal and non-formal modes of learning. This arises simply out of the substitutibility characteristic. In other words, if the educational output produced by both formal and non-formal modes of learning are close substitutes for each other, a rise in the price of one output results in an increase in the demand for the other with a consequent, determinate rise in its price.

But the reverse is the case if educational output and services produced are complements. The rise in price of one educational output will lead to the fall in the demand for the other. For example, the demand for envelopes falls as the price of writing paper rises and less of it is used. The measure of the responsiveness of one variable to change in another in so far as the educational output is explained in terms of cross elasticity of demand.[3] In the context of educational output, we are concerned with the demand for non-formal educational output as it is affected by a price change for formal education (other things being equal). This concept of cross elasticity of demand can serve two purposes: First: it can indicate the degree of substitution between formal and non-formal educational output. It should provide an evaluative measure of gaps in the chain of substitution between formal and non-formal educational output. Second: it can help resolve the problem of allocation of resources. Cross

---

[3]Elasticity means relative measure of the responsiveness of one variable to change in another. Similarly when the price, Px of a commodity x influences the quantity demanded Qy, of another commodity y, the cross-elasticity of demand can be defined as

$$\frac{\dfrac{Qy}{Qy}}{\dfrac{Px}{Px}} = \frac{Qy}{Qy} \cdot \frac{Px}{Px} \, \text{or} \, \frac{Qy}{Px} \cdot \frac{Px}{Qy}$$

Where $\Delta$ = increments/change, Px = price of commodity x, Qy = quantity demanded of commodity y.

elasticity

mand is po

it is nega

Thus

tutes a ri

to the inc

case of po

two educat

educationa

mand for n

city of de

business m

either in

shown belo

:

elasticity can be positive or negative. When cross elasticity of demand is positive, two commodities are likely to be substitutes, and when it is negative, two commodities are likely to be complements.[4]

Thus if formal and non-formal educational output are close substitutes a rise in the price of formal educational output is likely to lead to the increase in demand for non-formal educational output. This is the case of positive cross elasticity of demand. Again on the other hand, if two educational outputs are complements, an increase in the price of educational output from formal schooling is likely to decrease in the demand for non-formal educational output. This means negative cross elasticity of demand. For example, bankers, forest rangers, auto mechanics, business managers, shopkeepers to mention only a few, can be trained either in schools or on the job, subject to "critical education" as shown below:

---

Allan J. Braff, Micro-Economic Analysis, New York, John Wiley and Sons, Inc., 1969, p. 17.

Figure-4

0 T
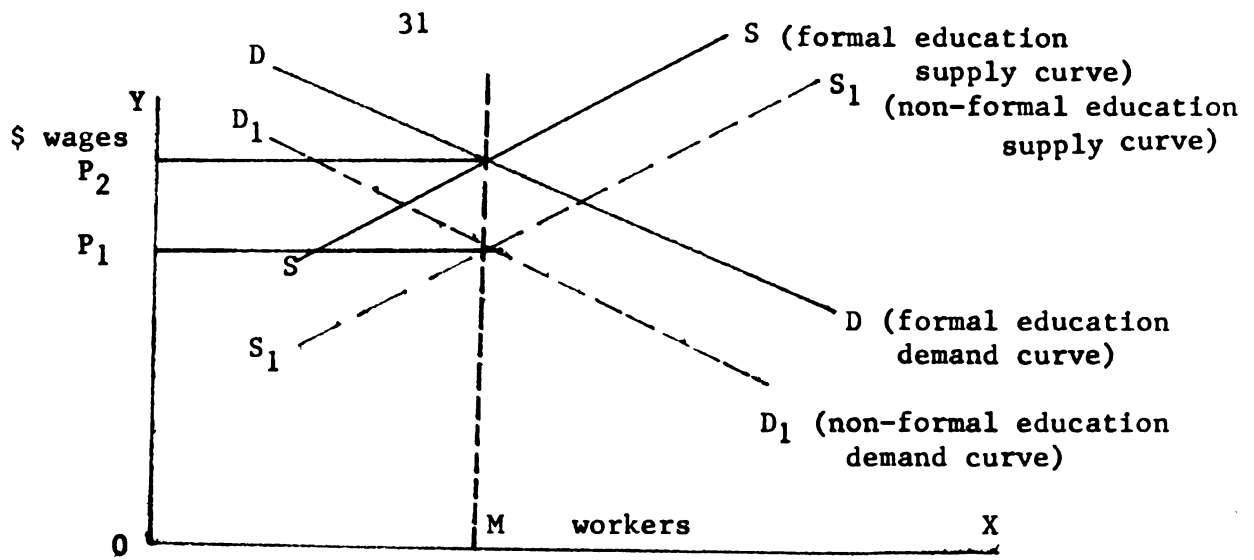
Figure-4 A    Supply-demand model for equilibrium wage
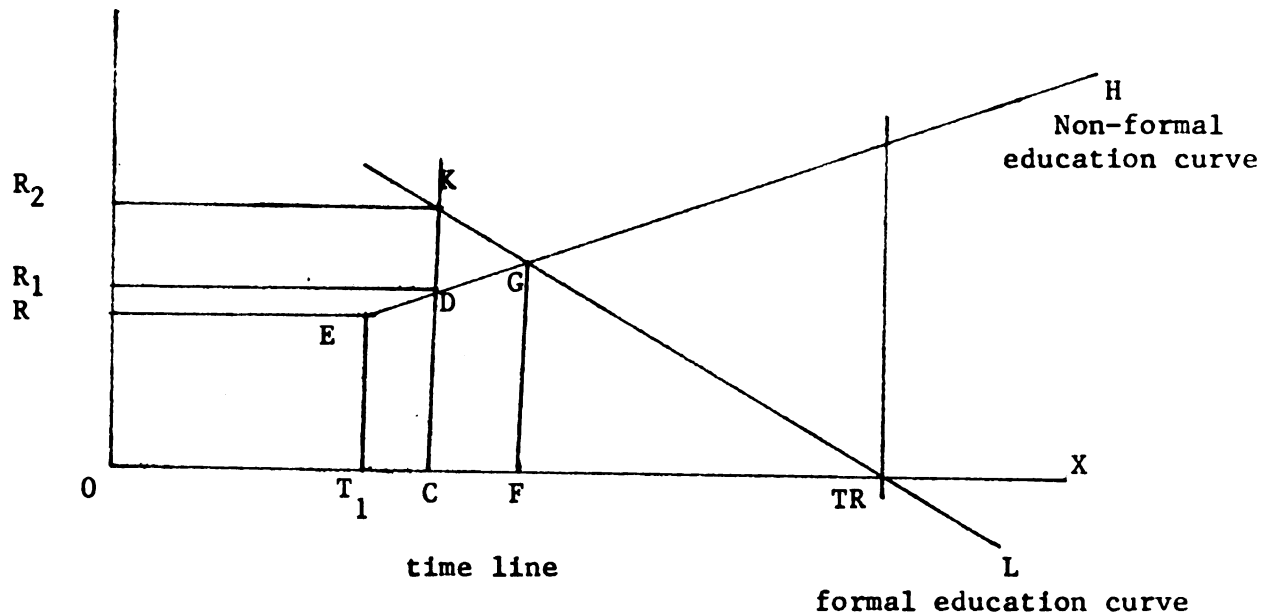


Figure-4 B   Hypothesized relationship between formal and non-formal
             educational output (e.g., bankers, business managers,
             auto mechanics, etc.)

x axis represents time (e.g., age)

Y axis represents acquired skill assumed to be constant but
    economy is developing and demands for higher skill with
    the advance of the economy is assumed. We are also
    measuring wages with the help of y axis

TR represents retirement age

O $T_1$ E R critical education area-minimum education needed to
    start the job

With the help of this figure we can explain the diverse
relationships between non-formal and formal educational output.

cat

by

kno

may

sak

lea

tha

the

is

for

sul

ve

pr

ap

em

On

th

wh

th

ti

f

Let us examine the nature of the curves before taking up their impli-
cations in (Figure 4 B). Here the critical education areas as indicated
by $OT_1ER$ refers to basic skills of reading, writing, and the necessary
knowledge of arithmetic required for the job. This critical education
may be dispensed either through formal or non-formal means; but for the
sake of simplicity it is assumed here that it is received in school at
least through the secondary level. Another reason for this assumption is
that it is easier to calculate the costs. In the case of formal schooling,
the measurement of unit cost (e.g., cost per additional year of schooling)
is relatively easy compared to non-formal education. In some cases non-
formal education (e.g., on-the-job training) involves no extra costs re-
sulting from an increase in output of one unit.[5] In Sections III and IV
we shall elaborate this point.

Now once this critical education is received, one can learn the
principles of banking and managing either in school or on the job as an
apprentice. This is shown diagramatically (see Figure-4B) with both
employees having received critical training and skills OR in time $OT_1$.
One worker begins life-long non-formal training and acquired skills along
the line EH. The other continues formal education through time $T_1C$ at
which point he has a level of skill CK which is evidently greater (by DK)
than that possessed (CD) at the point in time by his counterpart. Now
the employer is faced with a choice: if he hires personnel trained in

_____

[5]We can compute the marginal costs either from variable costs or
from total costs.

    Average total cost (ATC) = $\dfrac{\text{Total Cost (TC)}}{\text{output}}$

    Average variable cost (AVC) = $\dfrac{\text{Variable Cost (VC)}}{\text{output}}$

    Average fixed cost = ATC - AVC

school o

of manage

ment if

effort t

be, is l

shown ne

The

reason.

ing a co

apprenti

ing by-d

the same

geous po

son with

Wi

hire (s

educati

wants t

a wage

The dem

similar

eration

mand an

level c

would b

6

school or college, he is likely to get a person with the latest techniques of management skill (i.e., as indicated by the gap DK), but after appointment if he does not receive any in-service training or makes no conscious effort to gather experience on the job, his skill, however current it may be, is likely to deteriorate. This is why the formal education curve is shown negatively sloped.

The non-formal education curve is positively sloped for a simple reason. After receiving the basic education, the person concerned is making a conscious effort to learn on the job either through in-service or apprenticeship training. We have empirical evidence to show that learning by-doing is a slow but steady process of learning compared to learning the same skill in the schools.[6] Thus initially he may be in a disadvantageous position but ultimately he tends to have an advantage over the person with a formal education background.

With this brief explanation let us suppose that industry wants to hire (see Figure-4 A) business managers or bank managers. The critical education area, $OT_1ER$, is the same for all of them. Now if industry wants to hire managers from the non-formal education, it would pay $OP_1$ as a wage indicated by the equality of demand and supply and hire OM workers. The demand is related to value productivity to the employer; the supply, similarly, is related to costs of acquiring training, among other considerations. With respect to products of formal education, the parallel demand and supply relationships would be as follows: The demand for each level of employment would presumably be higher since worker productivity would be greater as indicated in Figure-4 B at time point C. The supply

---

[6]_International Labour Review_, September, 1969, pp. 239-245.

would be

required

equilibr

output.

Now

to hire

pay for

this is

their ma

$P_1P_2$, ti

point it

the time

the firm

over the

point G.

the init

to act a

assess t

of adequ

far as n

this hig

The know

dealing

be usefu

receivin

thereby

gap righ

would be smaller at each level of employment reflecting the investment required in time $T_1C$ to obtain the formal education skills. Thus the equilibrium wage rate ($OP_2$) is higher than that for non-formal education output.

Now the question arises as to whether it is profitable for the firm to hire non-formal education managers at a wage equal to that it would pay for managers coming via a formal education program. In the short-run this is uneconomic since the firm would be paying more than the value of their marginal products. Quantitatively, this "loss" is the "extra" wage, $P_1P_2$, times the number of managers hired, OM. But from the long viewpoint it may be advantageous for the firm to hire at $OP_2$ because after the time OF, the non-formal education manager becomes the real asset for the firm. In terms of knowledge and skill, he has a decisive advantage over the formal education manager as indicated by the gap to the right of point G. The higher wage offer to non-formal education output, despite the initial lower skill compared to formal education output, is likely to act as a positive incentive to learning. Although it is difficult to assess the impact of this incentive accurately partly because of the lack of adequate data as well as inadequacy of the theory of learning in so far as non-formal education is concerned, yet common sense suggests that this higher wage tends to accelerate the rate of learning through earning. The knowledge of modern management techniques and some pioneer works dealing with the complex issues of pedagogy, sociology and psychology may be useful. It is assumed here that managers from formal education are receiving no non-formal or in-service training to up-date his skill and thereby following the same line of analysis of Figure-1, to explain the gap right of point G in Figure-4 B above. From this analysis we can

deduce th

(a) W

(b)

(c)

(d)

The a

demand is

ability be

lem of all

deduce the following conclusions:

(a) With the increase in the cost of basic education the cost of the formal education is likely to be more than the non-formal education, because in many situations, non-formal education (e.g., learning by doing) involves no marginal costs.

(b) If non-formal education is a substitute for formal education as regards the saleable skill in the market, the demand for non-formal education tends to go up with the increase in the price of formal education.

(c) If non-formal education programs become the complementary source of supply of skill in the job market, the demand for non-formal education will decrease with the decrease in the demand for complementary formal education. This will arise because of the complementary characteristics explained earlier.

(d) If the factory becomes the classroom for workers, both the workers and employers will be benefited. Workers are likely to be more committed to work; they are also likely to be more contented. Encouragement of attaining higher skill implies higher remuneration and recognition. Employers will be getting the benefits because there is likely to be less turnover of workers; there will be less chance of a strike. A better employer and employee relationship in a job economy such as the U.S. is bound to reduce the social tension.

The analysis of educational output in terms of cross elasticity of demand is very important because the measure of the degree of substitutability between formal and non-formal education helps resolve the problem of allocating resources - a central issue in economics.

It is

volved in

Allocation

ing deman

stage →

stage →  Fo
se
st

stage →

stage → Allo

stage → Form

stage →

stage →

stage →

A little

seems nec

1st stage

2nd stage

It is appropriate at this point to examine the various levels involved in macro decision-making as it concerns the allocation of resources. Allocation is a problem because resources are limited relative to competing demands. The stages are as follows:

1st stage → 
| Determination of overall educational priorities and objectives and identification of areas of concern |
| --- |

2nd stage → 
| Formal education programs: selection of inputs (e.g. student, teacher, housing, etc.) | Non-formal education programs: selection of inputs (e.g., school dropout, educated unemployed, etc.) |
| --- | --- |

3rd stage → 
| Establish linkages through system analysis approach, knowledge of elasticity; its application |
| --- |

4th stage → 
| Allocation of funds | Implementation | Allocation of funds |
| --- | --- | --- |

5th stage → 
| Formal education output | Non-formal education output |
| --- | --- |

6th stage → 
| Total human resource development |
| --- |

7th stage → 
| Foundation of social infrastructure for growth development and change. |
| --- |

8th stage → 
| Evaluation |
| --- |

A little discussion on each of the various stages of educational output seems necessary.

1st stage: The first task of the education planner is an agreement on program objectives and goals and identification of areas of concern regardless of fund commitment and mode of learning. This will enable the educators, economists, and planners to have a better perspective of the overall problem and to set up priorities.

2nd stage: An overview of the problem will enable professionals and politicians to identify the client group to be served. Regular students, disadvantaged, unskilled, unemployed school dropouts, etc., may be the target groups of the program. This

3rd stage:

4th stage:

5th stage:

6th stage:

7th stage:

brings the question of choice as to whether a target group is to be served by arranging formal schooling or not. For instance, if the target group is composed of technologically unemployed persons requiring re-training, perhaps non-formal education is well suited. But, if the objective is to reduce the school dropout, perhaps reforms in the existing school programs seem necessary. Sometimes objectives may not be defined in terms of the person trained.

3rd stage: When the various alternatives modes of learning are explored, an effective linkage is needed in order to avoid economic waste resulting from duplication and unnecessary complication. At this stage, the knowledge of demand for and supply of trained personnel is imperative. Proper analysis of the demand and supply relationships will enable the planner to identify the resources needed to accomplish the desired educational tasks – essentially solving the problem of allocation of funds.

4th stage: But the allocation of funds and implementation process are simultaneous. Only through efficient implementation can we

5th stage: expect optimal educational output. Here by formal and non-

6th stage: formal educational output I mean total educational effort for the development of the skill and capacity of the people involved.

7th stage: At stage seven, however, we find the development of new skill and knowledge which may be expanded as a part of the social infrastructure which is very much needed for growth. New knowledge and skill appear – replacing the older ones. But

8t

ar

No

du

th

fo

se

hi

se

pu

t

s

S

even educational investments tend to remain and to be self-reinforcing.

8th stage: In the light of changing circumstances, the work of the evaluation will start to set up new areas of concern, new educational priorities, and new policies. Thus, the circle is complete; its lesson is that there is no end to the tasks of allocating and re-allocating funds. The economic philosophy is that allocation of funds for the development of human resource is not an end in itself but a means to some end. This end surely varies from society to society – a critical point for planners and advisors to bear in mind.

## Empirical Analysis

We have examined complementarity and substitutability between formal and non-formal education in theory. Now we examine the issue empirically. Non-formal education may play an important role in modernizing the industrial sector as well as peasant or agriculture sector of the LDCs. In the industrial sector, the most critical manpower requirements tend to be for people with middle level skills. Lewis characterizes the products of secondary school as the backbone of public administration. According to him: "The middle and upper ranks of business consist almost entirely of secondary school products, and those products are also the backbone of public administration."[7] Non-formal education can play a crucial role in filling the gap between employment and education for those who have successfully completed the secondary education. Intensive and extensive

---

[7]W. Arthur Lewis, "Education and Economic Development", International Social Science Journal, Vol. XIV, No. 4, 1962, pp. 685-699.

training p

ments. Mo

the proble

learning m

It is

"shortages

tioned six

educated p

(2) shorta

(3) shorta

(4) shorta

(5) shorta

business m

of personr

With regar

can be con

date in th

in a rapic

formal edu

ly than fo

As fo

tion can p

such as th

T.V. speci

Frec
Modernizir
May, 1962,

training programs could do this within specific reference to job require-ments. Moreover, non-formal education is especially suited for attacking the problems of school dropouts and "educated unemployed". Non-formal learning modes seem to be particularly suited to retraining facilities.

It is paradoxical that in many less developed countries, manpower "shortages" co-exist with manpower "surpluses". Professor Harbison[8] men-tioned six categories of shortages of manpower: (1) shortages of highly educated professional manpower such as scientists, engineers, etc.;

(2) shortages of top-level managerial and administrative personnel;

(3) shortages of teachers, particularly teachers in secondary education;

(4) shortages of technicians, nurses, agricultural assistants, etc.;

(5) shortages of craftsmen of all kinds such as stenographers, bookkeepers, business machine operators, and (6) shortages of miscellaneous categories of personnel such as radio and T.V. specialists, watch repairers, etc.. With regard to the first two categories of shortages, non-formal education can be complementary; it can bring freshness and help people stay up-to-date in their areas of specialization. A fairly high rate of obsolescence in a rapidly changing society is a common phenomenon. Possibly, non-formal education can deal with the problem of obsolescence more effective-ly than formal learning in schools.

As for the remaining four categories of shortages, non-formal educa-tion can possibly substitute for formal schooling in most of the cases such as the training of nurses, agricultural extension agents, radio and T.V. specialists and the like. In such training, non-formal education

_____

Frederick H. Harbison, "Human Resources Development Planning in Modernizing Economics", International Labour Review, Vol. LXXXV, No. 5, May, 1962, pp. 2-23.

can rel

of less

failed

Th

even in

in the

ployed

technol

an adva

Non-for

be a sy

of elec

the dev

skill l

coming

obsoles

can relate to economic and social conditions and to the cultural heritage of less developed countries where imported formal education models have failed at least in part in content and method.

The significance of non-formal education can hardly be overestimated even in a "job economy" such as that of the U.S. where 90% of 86 million in the labor force in 1972 were employees as opposed to being self-employed or being employers. This job economy operates in a world of change - technological, economic, social and legislative change.[9] The dynamics of an advanced economic system gives rise to a host of manpower problems. Non-formal education can work in two important directions: First, it can be a system of retraining in minor or major increments. The applications of electronics and atomic energy in the production process have led to the development of new processes, new techniques, and new products. The skill learned through a formal system, however current it may be, is becoming a skill for yesterday, and we have already noted the high rate of obsolescence in a technological society. Coombs describes the problem:

> With knowledge. technology and job characteristics all changing very rapidly, there is today a universal problem of keeping the content of education up-to-date — of giving students an education that will fit them for the different world they will live in tomorrow. Teachers and textbooks— the two major conduits by which the 'stuff of learning' gets piped into the classroom—have a high rate of obsolescence in this rapidly changing world. No satisfactory measures have yet been found, or at least widely applied, for keeping teachers and textbooks regularly up-to-date.[10]

_____

[9]Daniel H. Kruger, "The training of youth-community responsibility", School of Labor and Industrial Relations, Michigan State University, East Lansing, Michigan 48823.

[10]P. H. Coombs, "Time for a Change of Strategy", in Quantitative Aspects of Educational Planning (ed) C. E. Beely, Paris: UNESCO, 1969, Chapter 1.

"wider s

versifie

the U.S.

educatic

people,

schoolir

expectec

expectat

creases

that at

graduat

"equiva

as a su

to beco

process

both.

nations

Nos. of

Years c

Years c

Source:

1l

Means c

Review,

Second, non-formal education seems to be consistent with a much "wider spectrum of individual differences and needs" in a society of diversified population. This is particularly true in a country such as the U.S. where significant social change is taking place. Non-formal education can be utilized to increase the education base of its diverse people, thereby reducing economic and social discriminations. Formal schooling which may well serve the purposes of an elite can hardly be expected to convert easily into "mass educational system". As employers' expectations regarding the educational attainment of the employee increases, non-formal education may be the vehicle through which much of that attainment may be achieved. Employers now expect to use high school graduates (or their equivalents): non-formal education may provide the "equivalents". Recently, Professor Maton studied experience on the job as a substitute for formal training.[11] A primary school graduate aiming to become a fully skilled mechanic can follow one of the two learning processes – formal training and on the job experience or a combination of both. In the example presented below, he identified seven possible combinations of formal training and on-the-job experience.

Table I

Combinations of training and experience required
to become a fully experienced Tool and Die-Maker

| Nos. of Combinations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Years of Formal Training (E) | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Years of On-The-Job Experience (Y) | 13 | 10 | 7 | 4 | 2 | 1 | 1 |

Source: International Labour Review, Sept., 1969, p. 241.

---

[11]J. Maton, "Experience on the Job and Formal Training as Alternative Means of Skill Acquisition: an Empirical Study", International Labour Review, September, 1969, pp. 329-245.

20

15

10

5

0

Belgium                                                        Argentina



Years of
training
on-the-job

Years of formal training                         Years of formal training
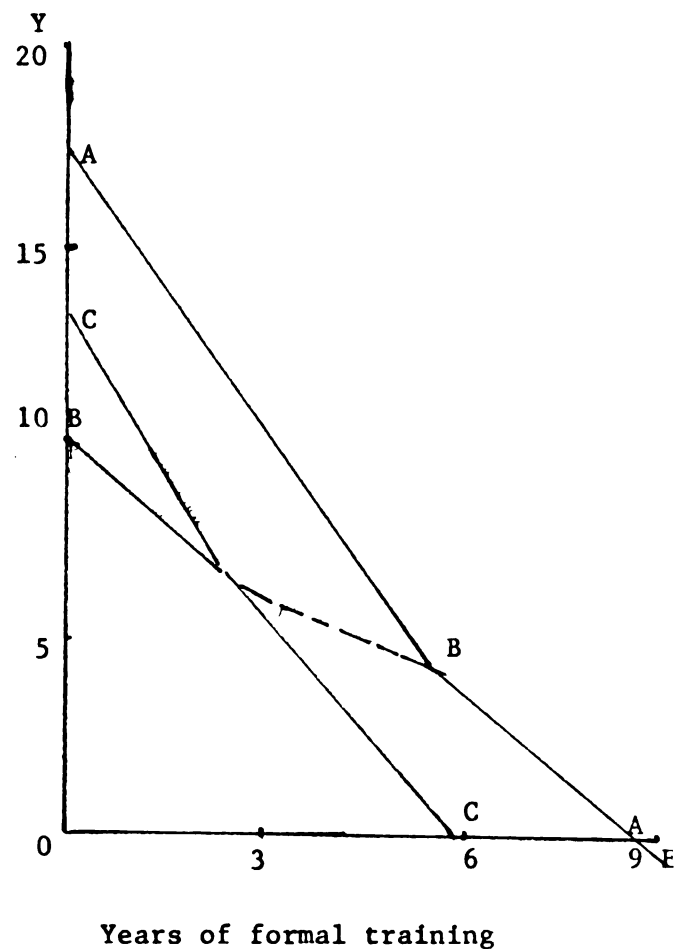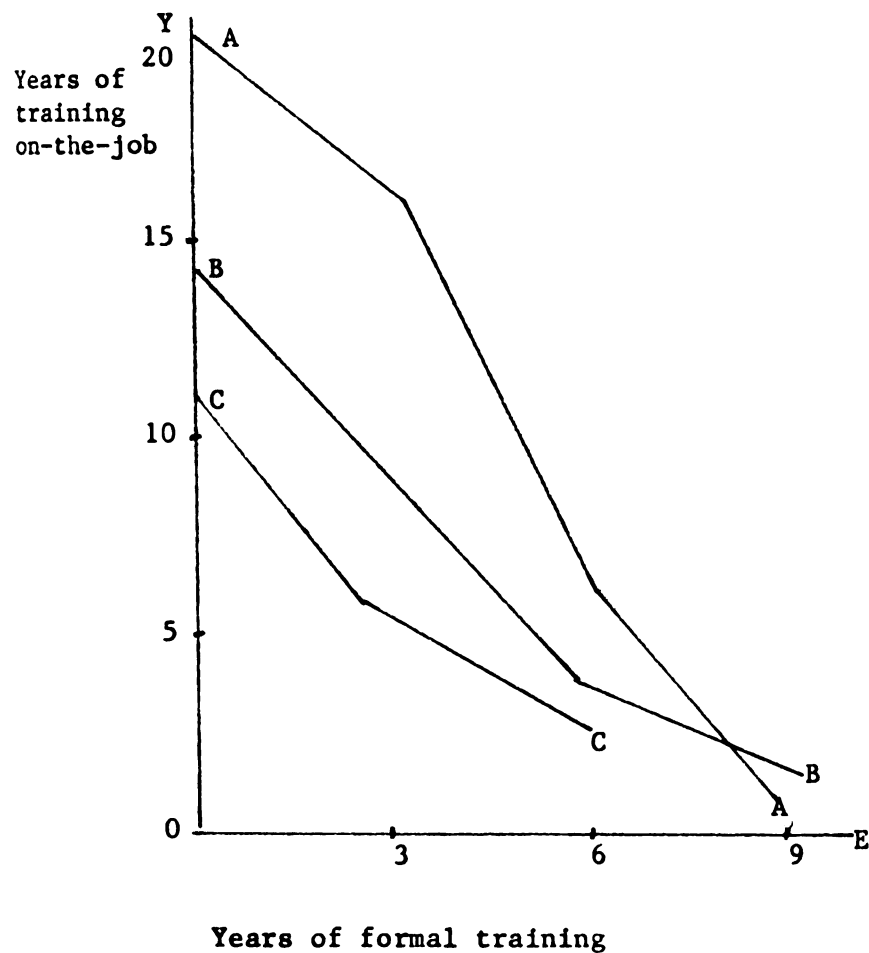
Figure 5:   Possible combinations of experience and formal training required
            for certain higher level jobs in Belgium and Argentina

AA - Assistant engineers

BB - Junior technicians

CC - Skilled workers

Source:   International Labour Review, 1969, p.241

The first of the seven combinations indicates that a primary school graduate needs 13 years of experience on the job without any further formal education and so on. Similar empirical substitutability curves for some specific occupations such as assistant engineers, junior technicians and skilled workers have been drawn for Belgium and Argentina.

| I. | Assistant engineers | | II. | Assistant engineers | |
|---|---|---|---|---|---|
| E = 0 | Y = 20.1 | | E = 0 | Y = 17.2 | |
| 3 | 16.0 | | 3 | 11.2 | |
| 6 | 6.3 | | 6 | 4.2 | |
| 9 | 1.4 | | 9 | 0.7 | |
| III. | Junior technicians | | IV. | Junior technicians | |
| E = 0 | Y = 13.4 | | E = 0 | Y = 11.2 | |
| 3 | 8.9 | | 3 | 7.7 | |
| 6 | 3.1 | | 6 | 5.1 | |
| 9 | 2.0 | | 9 | 0.8 | |
| V. | Skilled workers | | VI. | Skilled workers | |
| E = 0 | Y = 11.9 | | E = 0 | Y = 13.8 | |
| | 5.7 | | 3 | 7.3 | |
| | 2.6 | | 6 | 2.2 | |

Source: *International Labour Review*, Sept., 1969, p. 243.

E = years of formal training
Y = years of on-the-job training

In this analysis only the time requirements have been taken into account. There seem to be advantages and disadvantages of each of the combinations of formal training and experience on the job, and certainly one approach to choosing alternatives is to estimate costs for each.

A primary school graduate taking no further education may need 13 years of experience on the job to be a tool and die-maker. This is a long time. But here no marginal costs is involved in learning this skill: the worker starts earning and producing immediately so no income is foregone. But in the case of combination number 6 (Table I) it is possible

to

th

ins

At

ly

min

th

ber

of

"Th

rep

and

dra

abo

The

est

In

st

to

you

VI,

to reduce drastically the years of on-the-job training. The trainee, in this case, starts earning as a tool and die-maker at the end of 6 years instead of 13 years. The optimal combination is difficult to determine. At the outset, it may differ for society and the individual. Theoretically, least cost combinations for society and each individual are determinable with sufficient data concerning a number of variables although this presents practical difficulties.

Non-formal education clearly can help, however, reducing the gap between education and employment in various ways.

Efficiency gap. The efficiency gap is the ineffective utilization of resources - both human and financial. It represents educational waste. "The term 'educational wastage' includes two main components: 1) grade repetition, which refers to pupils who are held back in the same grade and do the same work as in the previous year, and 2) dropout, or withdrawal from a school cycle before its completion."[12]

Of about 30 million children enrolled in grade 1 in Asian schools, about 50% of them leave before completion of the first year of education. The waste has been estimated at $100 million a year in Asia; and this estimate does not include loss of the value of time spent by the students. In 1960, half the children who entered school in Latin America never started the second grade. Three-fourths dropped out before they learned to read.

Even in the U.S. it has been estimated that one-third of the nation's young people drop out of school before completing senior high school, many

---

[12] UNESCO, "Educational Wastage", in Development Digest, USAID, Vol. VI, No. 1, January, 1968. p-75.

without appropriate skills to meet the job demands in labor market.[13]

This educational investment is a dangerous waste; it tends to create and

perpetuate a "vicious circle" described by UNESCO:

> A high ratio of wastage in an education system constitutes
> educational deprivation in one of its most acute forms.
> Since wastage is almost invariably higher among children
> who belong to socially or economically handicapped classes,
> existing imbalance between social groups or geographical
> regions are accentuated and the sections of the populations
> which most need the socializing influence of education are
> deprived of it.  Since educational attainment is associated
> with higher income earning capacity, a situation of ever
> widening inequality of income distribution tends to be
> perpetuated.[14]

The main manpower consideration of this waste is reflected in the

high unemployment of school dropouts.  The mere increase in the rate of

economic growth is not going to help the situation very much; even the

increase in the number of jobs available is not perhaps the solution

because the main problem is that many young people do not possess quali-

fications required by the employers.  They need to learn employable

skills.  Non-formal training or retraining facilities to provide saleable

craft skills or any other skills should appeal to both MDCs and LDCs.

Demand and Supply Gap.  The demand for educational services has ex-

ceeded its supply both in advanced and less developed countries.  This

demand/supply gap has its qualitative and quantitative aspects.  The

quantitative aspect refers to the extraordinary growth of the youth popu-

lation.  This will be discussed later on under population gap.  Here we

are concerned with the subjective aspect of the gap which refers to rising

---

[13]Daniel H. Kruger, "School Dropouts - a Tragic Manpower Problem",
Labor and Industrial Relations Center, Michigan State University, East
Lansing, Michigan   48823.

[14]UNESCO, "Educational Wastage", op. cit., pp. 75-77.

expectati

the advan

of human

and more

reflectec

and builc

adjustmer

facilitie

case of l

sources a

employed'

demand/su

In

Properly

ment", tl

ment, utf

15p.

16p.

expectations of the people and low quality of the education. Both in the advanced and less developed countries there seems to be an explosion of human expectations resulting in overpowering rise in demand for more and more educational facilities as compared to acute resource scarcities reflected in the shortage of supply of skilled and well-trained teachers and buildings, scientific equipment and textbooks. This "crisis of mal-adjustment" has led to the over-crowded classroom with utterly inadequate facilities for learning.[15] This tragic human scene is most acute in the case of LDCs where an astonishing proportion of scarce educational re-sources are being utilized only to produce high rates of "educated un-employed", attrition, and grade repeaters. Professor Coombs depicts this demand/supply gap:

> Despite the valiant efforts of educational systems to
> expand (partly because of this) most of them have been
> unable to narrow the gap between the steadily rising pop-
> ular demand for their services and their capacity to admit
> more students and give them a satisfactory education. This
> is basically because education breeds its own demand, in-
> dependently of the economy's ability to support it. The
> youngster of illiterate parents who gets through primary
> school then wants to go to secondary school (though in
> Africa, for example, has only a one-in-ten chance making
> it). The dream of those who do get into secondary school is
> to go on to the university. The process everywhere works
> like a series of flood-gates; when the first gate is opened
> the flood soon washes against the second, and so on until
> the whole system is inundated. The developing nations that
> are striving today to achieve universal primary education
> are unleashing a flood of popular demand that will soon
> engulf their secondary schools and universities.[16]

In such a crisis, non-formal education does provide an alternative. Properly planned, it may reduce the magnitude of "the crisis of maladjust-ment", thereby improving the quality of manpower in terms of its develop-ment, utilization, and maintenance. The task before the educational

---

[15]P. H. Coombs, "Time for a Change of Strategy", op. cit., Chapter 1.

[16]P. H. Coombs, Ibid, Chapter 1.

planner

imposed

combinat

people w

philosop

marry th

trusted

Pop

gap is f

tion can

gap: (a

(a)

to two f

sequent

as befor

The

age popu

with the

___

planner is to develop alternative learning systems, subject to constraints imposed by the social environment and resources, and to choose the best combination of learning modes, whether they be formal or non-formal. "The people who are most likely to help him - whether they are economists, philosophers, sociologists - will be those who try to show him how to marry the needs of his particular community to the resources which are entrusted to him."[17]

Population and Cost Gap. The size and magnitude of the demand/supply gap is further compounded by the population explosion. Non-formal education can play its role in the following four components of the population gap: (a) explosion, (b) implosion, (c) diversification, and (d) change.

(a) Explosion: The explosive population increase in the LDCs is due to two factors: (1) extension of medical and health facilities and consequent reduction of death rates, and (2) maintenance of high birth rates as before.

> The death rate was cut in half in the United States during the period 1900-1950, when mortality rates dropped more rapidly than at any other time. However, Ceylon required only seven years, just after World War II, to equal that feat . . . life expectation has also increased tremendously in the developed countries, and the same development will accompany the population explosion in the developing countries, In 1850, one-fourth of all persons born in Western countries was dead by age 10, and one-half by age 45. In 1950, one-fourth was dead by age 60 and one-half by age 70.[18]

The population explosion has led to the tremendous growth of school-age population. In quantitative terms, formal schooling fails to cope with the situation. This failure is reflected not only in terms of the

---

[17]C. E. Beeby (ed.), Qualitative Aspects of Educational Planning, UNESCO, International Institute for Educational Planning, 1969, p. 108.

[18]Philip M. Hauser, "World Population Perspectives and Economic Development", in Manpower and Employment Planning in Lower Income Countries, Department of State, AID, Office of Labor Affairs, February, 1971, pp. 33-34.

currentl

formal s

LDCs are

creasing

every 14

sion 1,

cent a y

primary

ren, the

a year.[1]

ture, no

tion but

teachers

example,

enrollme

multipli

India, I

illiter

Non-for

tainabl

manpowe

cost of

society

19-

Governme

20E

and Comp

currently increasing rate of illiteracy but also in the rising costs of formal schooling. According to one estimate, school enrollments in the LDCs are increasing in an arithmetic progression 1, 2, 3, 4, 5 (i.e., increasing at a rate of approximately 5 per cent a year and doubling in every 14 years), but school costs are increasing in a geometric progression 1, 2, 4, 8, 16 (i.e., increasing at a rate of approximately 10 per cent a year and doubling in every 7 years). In Pakistan, for instance, primary education is at present available to half of the nation's children, the number of illiterates is rising in excess of 1 million persons a year.[19] Again, there has been a sharp increase in per pupil expenditure, not all because of the massive expansion of extensive formal education but also because of the desire to up-grade the qualifications of teachers and to lower the student-to-teacher ratio. In Puerto Rico, for example, the income was ten times greater in 1965 than in 1940. School enrollment has more than doubled during this period, while school costs multiplied twenty-five times.[20] In many less developed countries such as India, Pakistan, and Bangladesh, over 80% of the total population is still illiterate; only a tiny minority enjoys the luxury of formal schooling. Non-formal education may offer in many cases, a less costly and more attainable alternative in the development, utilization, and maintenance of manpower. Once the formal schooling monopoly on education is broken, the cost of education may be reduced to broaden the educational base of the society.

---

[19]The Four Five Year Planning 1970-75 Planning Commission, Islamabad: Government of Pakistan, July, 1970, p. 145.

[20]E. Reimer, School is Dead, Garden City, New Jersey: Doubleday and Company, 1971, pp. 21-30.

(b) I

lation in

and contem

urban cent

tween the

collar job

because of

the most p

the wrong

work in th

uates to t

with the b

offers bus

and chiefs

of unskill

squalor, a

Calcutta a

long-stand

non-formal

ities in

Furthermor

the young

of non-for

(c) I

seems to l

ethnic and

cases prov

sified bac

(b) Implosion: The population implosion, the concentration of population in large urban units, has occurred in LDCs for several historical and contemporary reasons. In most cases colonial powers developed the urban centers in order to funnel raw material and manufactured goods between the colony and home country. Thus cities became the source of white collar jobs and in spite of uneasy atmosphere in the rural countryside because of liberation and invasion operation during the Second World War, the most powerful factors which led to this implosion are twofold. First, the wrong type of colonial formal education developed a disdain for manual work in the rural context resulting in migration of rural primary graduates to the towns. Second, pressure of population on the land coupled with the breakdown of traditional society and attractions which the town offers bustle; water out of a tap; freedom from obligations to relatives and chiefs; schools, theaters, hospitals, buses - also resulted in stream of unskilled people into the towns. These towns became the centers of squalor, disease, corruption, and delinquency. The big cities such as Calcutta and Karachi are havens of squatters in the night. This is a long-standing phenomenon in almost all LDCs, particularly in Asia. Can non-formal education play some role in such situations? Better opportunities in rural areas may reduce the impetus of migration to the cities. Furthermore, it can offer considerable to those who do emigrate. Both the young primary school graduates and school leavers may be the inputs of non-formal educational output.

(c) Diversification: Standardized formal education in many cases seems to be inappropriately rigid for the people having diverse racial, ethnic and cultural backgrounds. Since non-formal education may in many cases provide alternatives, it introduces flexibility for people of diversified backgrounds and cultural values.

(d)

while mar

Non-forma

of all ty

sion and

other har

cally dis

specifica

a decade

vividly:

:

(d) Change: In a changing society, many new jobs constantly appear while many old jobs disappear resulting in "technological unemployment". Non-formal education is perhaps best suited to fill the needs for craftmen of all types such as car mechanics, secretaries, stenographers, television and radio repairer, watch makers, business machine operators. On the other hand, it can also provide retraining facilities for the technologically displaced. In the U.S., for example, public retraining courses specifically for adult, experienced workers have been arranged for about a decade under public auspices. Professor Lewis describes the situation vividly:

> After seven years of primary education, a boy cannot be
> so easily contained by three acres and a hoe as his father
> was; if his school was any good, his aspirations must have
> been raised above this level. Only a reformed agriculture,
> using modern technology to secure high yields per man, could
> attract him; but agriculture cannot be reformed as quickly
> as schools can be built. Furthermore, in a country where
> only 10 percent of the children complete primary school,
> and less than 1 per cent enter secondary school, graduates
> of primary schools are in demand as clerks and teachers,
> and can earn several times as much as the average farmer.
> Primary school is thus established in young people's
> minds as the road to a well paid white-collar job. When,
> as a result of crash programs, the number completing
> primary school is raised within a decade from 10 to 50
> per cent of the age group, frustration is inevitable.
> Graduates of the rural primary schools stream into the
> towns, where they cannot find jobs; indeed, the simul-
> taneous expansion of the output of secondary schools
> will mean even fewer white collar jobs than before for
> primary school graduates. Blame is laid on the curri-
> cula of primary schools, but this is hardly relevant;
> young people's aspirations are determined by past market
> opportunities rather than by schoolbooks. The problem
> solves itself with the passage of the years. It becomes
> obvious that a primary education is no longer a pass-
> port to a clerical job in a town, and graduates of rural
> schools settle down to make the best of the opportunities
> available to them in the countryside. But they will still
> find it hard to remain in rural areas if the Government is

The

the magni

formal ed

so-young

underline

setting i

sion from

Source:

spending most of its money on developing facilities in
the larger towns, and neglecting the rural areas.[21]

The following tables are reproduced here in order to demonstrate

the magnitude of the problem. They speak for themselves the need for non-

formal education. Too, the fact that children are born of young and not-

so-young adults, literate and illiterate, informed and mostly uninformed

underlines the very important role for non-formal education in the family

setting if anything effective is to be done about the population explo-

sion from the "supply" side.

Table II
World Population at a Glance

| Year | World Population |
|------|------------------|
| 1825 | one billion |
| 1930 | two billion |
| 1960 | three billion |
| 2000 | seven billion |

Source: Department of State, AID, Office of Labor, Washington, D.C.,
Feb., 1971, reproduced from Manpower and Employment Planning
in Lower Income Countries, p. 33.

---

[21]W. Arthur Lewis, Development Planning: The Essential of Economic
Policy, New York: Harper and Row, 1966, pp. 79-80.

Enrol

Popu

China, (Re
France
Germany (F
Ghana
India
Morocco
Nicaragua
Niger
Sweden
Source:  Ap
         Ha

Table III

Enrollment trends in different areas of the world (1950-100)

| | PRIMARY EDUCATION | | SECONDARY EDUCATION | | HIGHER EDUCATION | |
|---|---|---|---|---|---|---|
| | 1960 | 1963 | 1960 | 1963 | 1960 | 1963 |
| World | 140 | 157 | 172 | 210 | 179 | 230 |
| Europe | 114 | 119 | 160 | 186 | 161 | 211 |
| North America | 142 | 153 | 161 | 192 | 157 | 197 |
| Africa | 223 | 273 | 271 | 364 | 267 | 345 |
| Western | 298 | 356 | 388 | 600 | 722 | 1,622 |
| Eastern | 210 | 259 | 306 | 449 | 700 | 1,083 |
| Middle | 203 | 268 | 366 | 641 | - | - |
| Northern | 230 | 291 | 332 | 407 | 302 | 400 |
| Latin America | 175 | 203 | 227 | 325 | 203 | 262 |
| Tropical | 193 | 229 | 255 | 369 | 205 | 280 |
| Middle | 186 | 230 | 255 | 401 | 220 | 311 |
| Temperate | 134 | 144 | 184 | 231 | 213 | 255 |
| Caribbean | 166 | 174 | 199 | 311 | 151 | 180 |
| South Asia | 175 | 204 | 213 | 267 | 240 | 273 |
| South East | 160 | 181 | 271 | 332 | 179 | 237 |
| South West | 201 | 249 | 341 | 449 | 179 | 237 |
| Middle South | 181 | 214 | 199 | 250 | 266 | 278 |

Source: Appendix-1 The World Educational Crisis by Coombs, New York: Harvard University Press, 1968.

Table IV

Populations of developing countries are 'younger,' thus placing a heavier burden of support on employable adults.

| | YEAR OF DATA | MEDIAN AGE OF TOTAL POPULATION | SCHOOL-AGE POPULATION AS PERCENTAGE OF TOTAL POPULATION |
|---|---|---|---|
| China, (Rep. of) | 1963 | 17.4 | 56.0 |
| France | 1962 | 32.9 | 28.2 |
| Germany (Fed. Rep. of) | 1961 | 34.0 | 21.4 |
| Ghana | 1960 | 18.3 | 48.3 |
| India | 1961 | 20.4 | 46.5 |
| Morocco | 1960 | 19.5 | 49.4 |
| Nicaragua | 1963 | 15.8 | 61.7 |
| Niger | 1962 | 18.0 | 54.4 |
| Sweden | 1960 | 36.5 | 23.1 |

Source: Appendix-1 The World Educational Crisis by Coombs, New York: Harvard University Press, 1968.

Wage ga

labor m

for suc

come. |

this dif

social

progress

porting

factor

between

the wid

gration

the far

difficu

Wage gap. Modern cities are plagued by the population implosion, rural labor migration to cities or towns. One of the basic economic incentives for such migration is the difference between urban wages and rural income. Professor Lewis indicates the following three factors which cause this difference: (a) the rise of trade unions, (b) a more powerful social conscience among capitalists causing them to share the fruits of progress with their workers, and (c) rise of nationalistic government supporting the claims of the workers against foreign capital. A fourth factor is the very well documented difference in average productivity between the two sectors. Whatever may be the causes of the difference, the wider the gap between rural and urban wage rates the greater the migration. Many of the migrant laborers retain a "security" foothold in the farm economy and as a result they accept the low wages; and it is difficult to organize them in a meaningful training program.

> With the high rate of labor turnover associated with the migrant labor system, it was not possible or worthwhile to select and train indigenous labor for skilled work, even if the mines and plantations were willing to do it. The same person did not stay on the job long enough for the purpose, and the labor supply remained a succession of new recruits. But on the other hand, the migrant labor system provided the mines and plantations with a very convenient stream of casual labor for which they did not need to take much care and responsibility. Most of the workers are adult single males who had left (or were encouraged to leave) their families behind in the subsistence economy. So the mines and plantations did not feel obliged to pay wages sufficient to maintain the worker and his family or to invest in housing and other welfare projects to enable him to enable him to settle permanently with his family on the location of his work. Further, during the slumps in the export market, the labor could be laid off and returned to the subsistence sector without continuing responsibility for them.[23]

---

[23]Hla Myint, The Economics of the Developing Countries, New York: Praeger, 1964.

In

in two

and give

educati

use of

(b) The

dustries

work wi

Equity

it is n

a subst

educati

people

are den

Re

discrim

in the

and the

it is e

We

gets t

of the

formal

is tru

In such a situation, non-formal education can help develop manpower in two ways: (a) In the rural sector surplus labor force may be trained and given saleable skills. Depending on the local need, a non-formal education program can be arranged to impart training or a skill to permit use of spare time to supplement subsistence income with rising income. (b) The consequent reduced pressure on the urban sector would enable industries to select and train on the job indigenous labor for skilled work without the losses associated with the high turnover rate.

Equity gap. There seems to be general agreement among economists that it is not feasible to provide formal schooling to all people, suggesting a substantial shortfall in the development of human resources. Formal education tends to provide access to power and opportunity. Many poor people are denied opportunity for upward mobility simply because they are denied educational opportunity.

Reimer[24] in his School is Dead argues that school creates social discrimination. No country can provide all the education its people want in the form of schools. The rich tend to be the ones to go to school, and they stay in school because private costs of schooling increase as it is extended.

We have already noted that in Bolivia it is the upper class which gets the benefit of over 99% of the educational expenditures. Most parts of the world resemble the Bolivian case. The current emphasis on the formal education tends to maintain the elite control in the society. This is true of the LDCs but also in the advanced countries as well.

---

[24]E. Reimer, School is Dead, Garden City, New York: Doubleday and Company, Inc., 1971, pp. 21-30.

C

and Ja

invest

perpet

I

non-fo

educat

advant

F

raise

that w

ish, t

Third,

sequen

be mor

and di

U

the hi

both a

the U.

2

Univer

Coombs demonstrates that it is the upper class of Sweden, the U.K., and Japan who benefit the most from formal education.[25] This educational investment in the upper class gives it social prestige and power - a self-perpetuating "vicious circle".

If the cost-benefit and cost effectiveness of various alternative non-formal activities are objectively analyzed; and if in fact, non-formal educational opportunities are shown to be economically expandable, three advantages will emerge:

First, this would broaden the educational base of the society and raise the average level of educational attainment. Second, it follows that with the extension of educational base, discrimination would diminish, tending to reduce somewhat the circularity of the "vicious circle". Third, with the increase of the level of educational attainment and consequent reduction of discrimination, the income distribution is likely to be more equal. Evidence indicates that level of educational attainment and discrimination do contribute to income differences.

Using cross sectional data several studies have substantiated that the higher educational attainment shows the steeper rise in earning in both advanced countries and LDCs. The earnings profiles in the U.S., the U.K., Mexico, and India are shown below:

---

[25]P. H. Coombs, The World Educational Crisis, New York: Harvard University Press, 1968, p. 190-191.

8000

7000

6000 — dollars per year

5000

4000

3000

2000

1000
500
0


2000

1800

1600 — pounds per year

1400

1200

1000

800

600

400

200

0

(a) U.S.A. 1949

dollars per year

8000
7000
6000
5000
4000
3000
2000
1000
500
0

4 years college

1-3 years college
4 years highschool

8 years elementary school
1-4 years elementary school

age

14-15  16-17  18-19  20-21  22-24  25-34  35-44  45-54  55-64  65+

(b) U.K. 1964

pounds per year

2000
1800
1600
1400
1200
1000
800
600
400
200
0

terminal education age
19 or over        (TEA)

16-18

15 or under

20-24  25-34  35-44  45-54  55-64        age
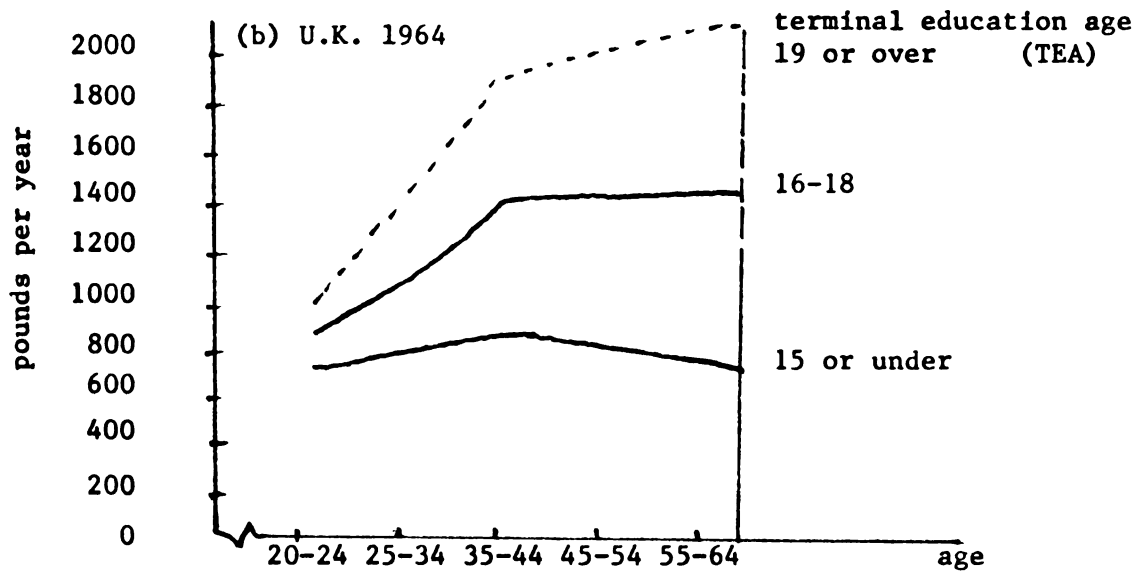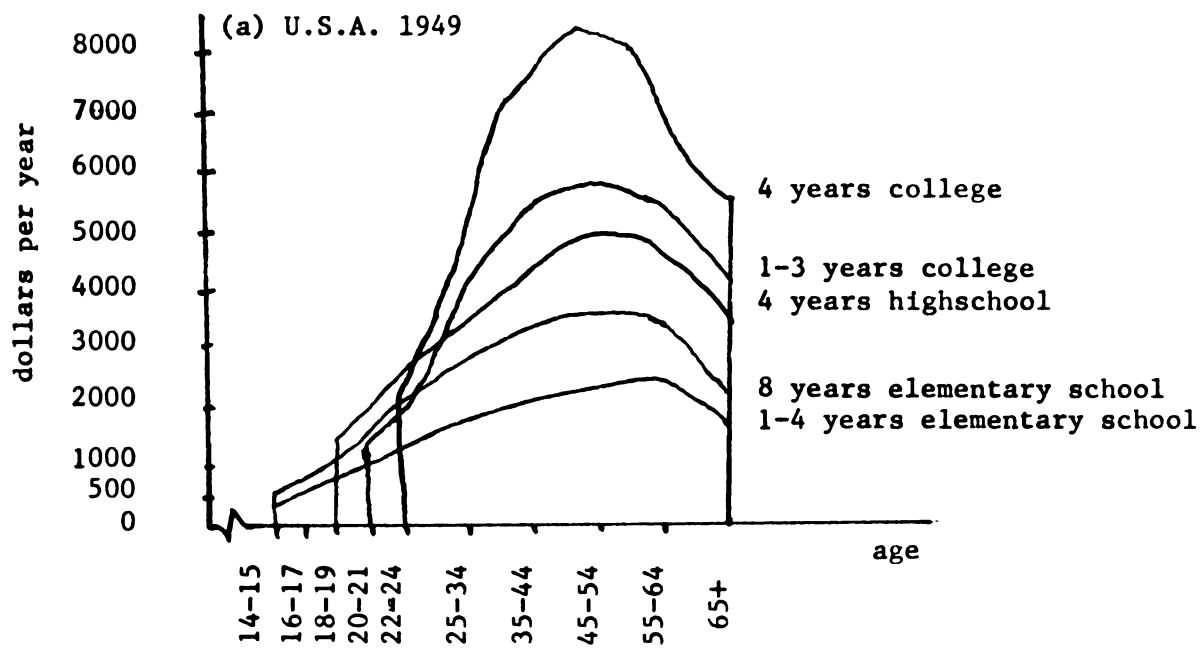
Note:  the sample sizes for each age cohort for the TEA group 19
       or over are too small to provide reliable results

3000
2600
2200
1800

1400
1000

600
200
0

6000

4000

3000

2000

1000

0
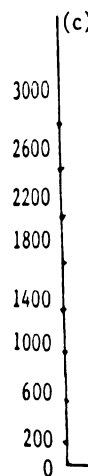
Figure-6  A
(
(
E
I

In his

A Comparati

University
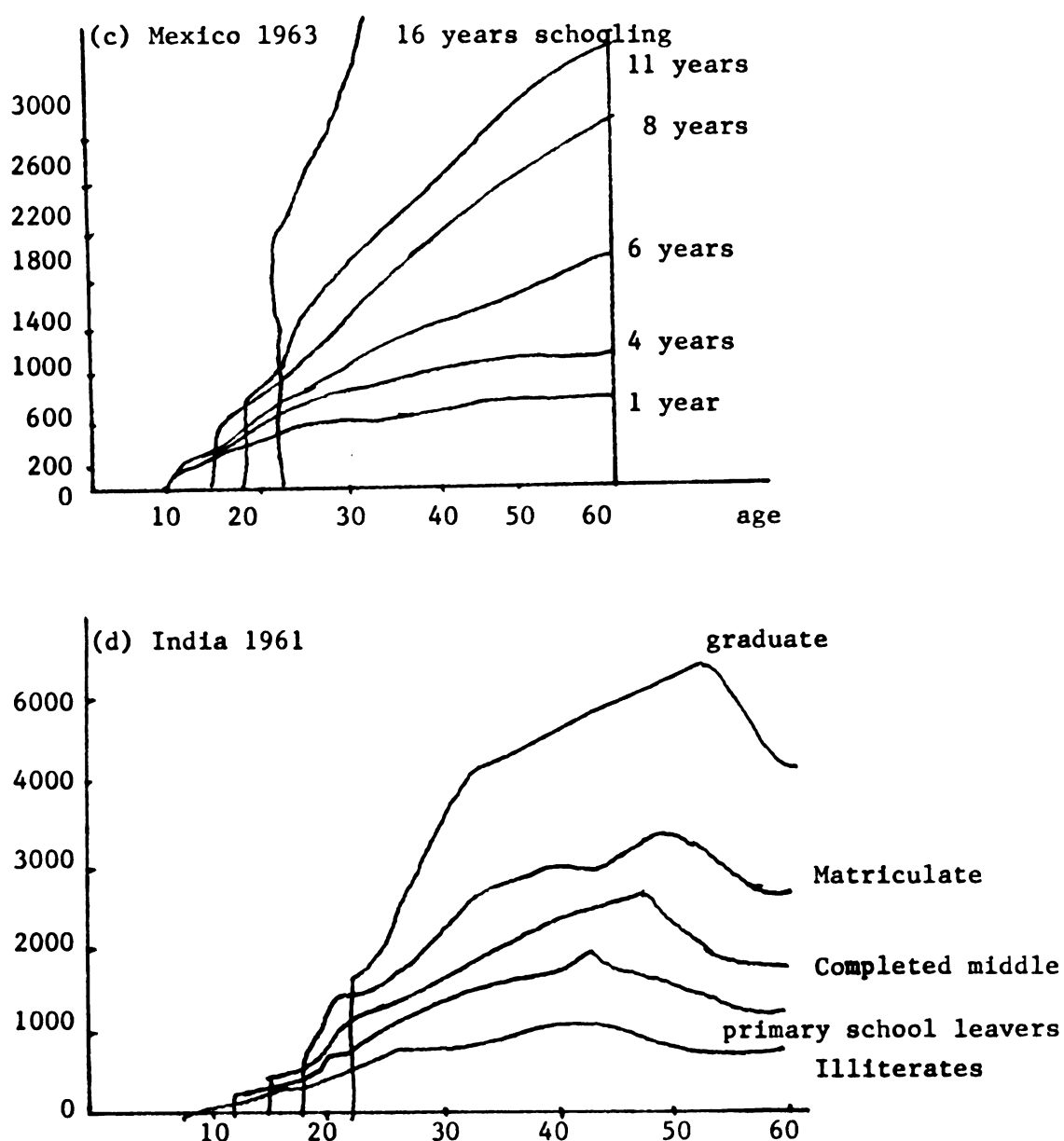
**Figure-6**  Age-earnings profiles in four countries.  Sources: (a) W. Lee Hansen (1963  1); (b) Henderson-Stewart (1965); (c) Carney (1967b); (d) Blaug, et al (1969): reproduced from An Introduction to the Economics of Education  by M. Blaug, Penguin Books, New York, 1972, p. 24-25.

In his article, "The Effect of Low Educational Attainment on Incomes: A Comparative Study of Selected Ethnic Groups", Prof. Walter Fagel of the University of California provides

Inte

try to es

The point

a positiv

contribut

Adaptibil

its survi

it tends

Non-

into the

---

26In
Wykstra,

27Jo
tion, est
April, 19

estimates of the importance of educational attainment in
accounting, for the income differences between Anglos and
members of disadvantaged ethnic groups.  Except for the
Spanish surname population of the South-West, educational
attainment accounted for less than half of the differences
between the 1959 median income of each group and that of
Anglos.  The income differences which remain after adjusting
for education were not analyzed, but undoubtedly result from
multiple causes, of which educational quality and especially
discrimination would seem to be most important.[26]

Interestingly enough, using survey data from the Tunisian shoe indus-

try to estimate earnings regressions, John Simmons found that

primary education has little relevance for the earning of
the blue collar workers in the Tunisian shoe industry.
Technical and apprentice training has even less validity.
What is much more significant than formal schooling for a
worker's earnings is his informal education.  This is the
process of learning by looking and doing that takes place on
the job.  Also significant in predicting the earnings are
behavioral and attitudial characteristics of the workers....
The finding that formal education plays a weak role in
the earnings of an African blue collar worker is consistent
with a growing body of evidence on American workers.  The
finding that informal education has benefits which are
superior to formal schooling has no direct counterpart in the
literature because of less adequate attempts to measure it.[27]

The point is that provision of increased non-formal education will have

a positive impact toward a more equitable distribution of income, thereby

contributing to a more egalitarian society.

Adaptibility gap.  Formal schooling by its nature requires conformity for

its survival.  Being part and parcel of a large bureaucratic arrangement,

it tends to be inflexible and rigid.

Non-formal education planning can introduce an element of flexibility

into the whole range of educational planning.  This flexibility is desirable

[26]In Human Capital Formation and Manpower Development, ed. by R. A.
Wykstra, The Free Press:  New York, 1971. p. 383.

[27]John Simmons, The Income Benefits from Formal and Non-Formal Educa-
tion, estimates for a socio-economic model, Economic Development Report No. 211,
April, 1972, the Center of International Affairs, Harvard University. p.2.

especiall

Pakistan,

all membe

formal sc

of life.

As Reimer

nological

ring soci

In p

tured and

Non-

a variety

direction

a large

formal ec

tion and

out the

another.

28E

29M
Human Ca
New York

especially in the rural sector. In dual economies such as Bangladesh, Pakistan, Indian, Nigeria, we find integrated or joint farm families where all members of the family contribute to the farming tasks. Structured, formal schooling comes in direct conflict with this traditional pattern of life. In a technological society also the school introduces rigidity. As Reimer argues that "school has become the universal church of a technological society, incorporating and transmitting its ideology and conferring social status in proportion to its acceptance by the people involved."[28]

In present day, formal education programs tend to be highly structured and rigid. As Bowman indicates:

> The fixed factor approach in manpower planning is part of the rigidifying view of school systems and certification that blocks experimentation and innovation in institutional arrangements for human resource development and in efforts within existing agencies and institutions. Partly, this problem is associated with the pre-occupation with schools as the agencies for human resource development. But it is a matter also of arrangements that discourage creative endeavors in which students and faculty participate to overcome obstacles and solve problems.[29]

Non-formal education programs tend to be heterogeneous and to have a variety of sponsoring organizations. This might imply a lack of central direction and control typical of formal education and a relationship to a large bureaucratic organization such as the ministry of education. Non-formal education programs tend to be more adaptable to educational innovation and change. Non-formal education programs need not be uniform throughout the country. Conditions may differ from one part of the country to another. Non-formal programs should develop to meet specific needs in

---

[28]E. Reimer, School is Dead, op. cit., p.30.

[29]Mary J. Bowman, "Perspective on Education and Development," in Human Capital Formation and Manpower Development, ed. by R.A. Wykstra, New York: The Free Press, 1971, pp. 425-34.

specific

satisfied

on the ob

for innov

schooling

be seen i

social ar

adaptabil

to the ec

education

human res

<u>Evaluatio</u>

to assess

changing

becomes

supervis

likely t

garnered

but ther

that sup

in the a

accelera

followin

    Pr

    se

    la

    a

    ge

    it

    on

    Re

specific situations, and they should disappear once the need is
satisfied.  These programs may be short or long in perspective depending
on the objectives.  These characteristics afford greater opportunity
for innovation and experimentation than usually permitted in formal
schooling.  Thus, the investment in non-formal education programs may
be seen in terms of greater flexibility in and adaptability to the
social and institutional framework -- increasing receptivity and
adaptability to change.  This would permit more appropriate response
to the educational needs of emerging nations.  Thus, non-formal
education can both complement and substitute for formal education in
human resource development.

Evaluation gap.  The evaluation gap arises because of the difficulty
to assessing the individual's performance on the job.  In a rapidly
changing U. S. society, for example, the skill of the supervisors
becomes relatively out-dated through time, whereas the skills of the
supervised are relatively up-to-date.  This "up-to-dateness" gap is
likely to result in serious weaknesses in evaluations.  Experience
garnered by senior supervisors is undoubtedly an asset for the enterprise,
but there is adequate need for retraining or in-service training so
that supervisors can be effective.  Eli Ginzberg, a leading economist
in the area of manpower development, expressed the problem of
accelerated obsolescence of skill in the technological society in the
following words:

> Promotions in large organizations depend primarily in years of
> service.  A man becomes a vice-president or president of a
> large organization in his late forties or early fifties.  In
> a rapidly advancing scientific and technological society men
> get close to the top when they are already obsolete.  At least
> it is likely that their knowledge of the science and technology
> on which the company's future depends will be out-of-date.
> Recently, at least one large American corporation has perceived

th
to

Th

because

their h

of indi

underst

skills

E

gap in

reflect

which a

inundat

For exa

estima

will ab

a

acquir

and ru

Busine

this danger, and has taken steps to retrain its senior technical personnel who hold important managerial positions.[30]

This evaluation gap may be even more complex in the LDC's because foreign supervisory personnel know too much of the skills of their highly technological societies and too little of the characteristics of indigenous skills and experience. Non-formal education has an understandable appeal in modifying both the indigenous and foreign skills into closer synchronization.

Expectation gap. Non-formal education can reduce the expectation gap in its different dimensions. In poor countries this gap is reflected in migration from rural to urban areas in search of jobs which are frequently not available. Further some labor markets are inundated with "educated unemployed" or "semi-educated unemployed. For example, the Indian Institute of Applied Manpower Research has estimated that the number of "unemployed educated" persons in 1975-76 will about equal the total stock of educated persons in 1960-61.[31]

Further, this situation is not reversable. The "educated" acquires prejudices, tastes, and objections concerning manual work and rural endeavors which effectively prevent him from participating

_____

[30]From "Man and Work" by Eli Ginzberg, Graduate School of Business, Columbia University, New York, no date.

[31]See Institute of Applied Manpower Research, Working Paper, No. 11, New Delhi, 1965, Part IV, p. ii.

in many se

Diss

number of

apparently

to the poo

Non-

ways in t

formal ed

from one

programs.

in acquir

formal ed

provision

Such flex

exercise

2. Poli

No

total hu

a consci

formal e

(a

(b

(c

in many sectors of the labor market.

Dissatisfaction occurs too in affluent sectors because of the number of available options. An excess of opportunity or options is apparently frustrating for the rich section as its lack is frustrating to the poor.

Non-formal education could help reduce this gap in two different ways in the rich and poor societies. In the rich community non-formal education can conceivably increase the adjustment of people from one option to another through systematic training and retraining programs. In the poor communities, non-formal education can assist in acquiring a saleable skill through the effective utilization of formal education or in substitution for it. Flexibility in the provision of one or two additional options can thus be provided. Such flexibility permits the individual within some limits to exercise options according to his level of aspirations and performance.

## 2. Policy Implications

Non-formal education can play a crucial role in the process of total human resource development. This implies the desirability of a conscious policy for the selection and implementation of the non-formal education programs. There are three choices:

   (a) Maintenance of the status quo by giving further emphasis to formal schooling;

   (b) Switching over to non-formal education in total disregard to formal schooling;

   (c) Combining (a) and (b) hopefully in some sort of optimal ratio elected on the basis of cost-benefit (or some other) analysis.

T

to prod

The ric

exists

or mana

later a

worker.

is give

fully a

be pos

the LD

educat

dropou

to wor

a litt

indica

array

educat

is a

The first two are two extreme alternatives, and both are likely
to produce the same result in maintaining elite control in the society.
The rich are most able to buy education, whether formal schooling
exists or not.  It is generally found that the son of a doctor, teacher
or manager, has more chance of participating in higher education and
later achieving a high social position than the son of a peasant or
worker.  "Often this phenomenon - whose existence no one can dispute -
is given too little or no weight.  However, it is only by becoming
fully acquainted with it, in its most inmost mechanism, that it will
be possible to combat it most effectively."[32]

Universal primary education was becoming an expensive fad in
the LDCs, and disproportionately large investments were made in higher
education available only to the middle and upper classes.  A high
dropout rate, brain drain, unwillingness of specialized personnel
to work in the rural context, desire to migrate to cities with just
a little formal education, workers' unrest are (among other results)
indicative of the failure of formal education.  What is needed is an
array of options with opportunities for the poor to participate in
education.

But choosing a combination of formal and non-formal education
is a crucial issue for the LDCs as well as for industrial states.

_____

[32]UNESCO, <u>Economic and Social Aspects of Educational Planning</u>,
Paris, 1964, p. 105.

One can l

automobil

or in a r

of servi

formal s

the hold

impartin

self-awa

through

oriented

elsewher

Wh

of the p

needs ar

communit

can be r

I

simply

account

of man

institu

some ar

values

will yi

One can learn how to read and write either in the home or in schools; automobile mechanics can be trained in a vocational training school or in a neighborhood garage; employed personnel may improve the quality of service by receiving in-service training within factories or in formal schools; the dropout rate can be minimized either by increasing the holding power of the school which involves school reform or by imparting effective and useful non-formal education to dropouts, self-awareness of the illiterate adult population can be developed through radio, television, or through formal night schools. Task oriented education can be arranged either in school, on the job, or elsewhere.

Which way to go? Which policy to implement? This is the dilemma of the planners, administrators, leaders who are supposed to know the needs and aspirations of the society. The willingness of the community or its leaders to implement non-formal education programs can be measured ultimately in terms of taxes and expenditures.

In developing a non-formal education program, educators cannot simply rely on economists' tools of analysis. They shall have to take account of the sociologists' view of society, anthropologists' views of man and his culture and political scientists' view of political institutions in a given society. Some variables are quantifiable and some are not. No doubt some views will be inconsistent with others; values differ. The task is not easy, and the methodology yet developed will yield no single neat answer. But the hard fact finally remains:

a single d

it is esse

many LDCs

constituer

is a visab

middle-cla

invisible

political

### 3. Summar

We l

directly

interrela

the natur

to modify

the diffe

with job

of proper

demand ar

the conse

to failur

populatic

by the ur

equity ga

opportuni

participa

a single decision must be made for better or worse, by someone.  Lastly,
it is essential that advisors on educational planning recognize that in
many LDCs there is a tendency to build schools to placate political
constituents without taking into consideration manpower needs.  It
is a visable act associated with higher incomes and near-universal
middle-class values, while non-formal educational programs may be
invisible or at least much less visible.  Not only in this field do
political conditions lead to misallocation of resources.

## 3.  Summary and Conclusion

We have discussed nine "gaps" which non-formal education can
directly or indirectly serve to ameliorate.  These gaps are
interrelated and in some cases even overlapping, and they make clear
the nature of the environment which non-formal education is supposed
to modify.  With this general comment, let us summarize meaning of
the different gaps:  (1) The job gap refers to misfit of education
with job requirements.  (2) The efficiency gap refers to the lack
of proper utilization of resources - human and financial.  (3) The
demand and supply gap refers to the rising demand for education and
the consequent low quality of education.  (4) The population gap refers
to failure of formal schooling to cope with the growth of school-age
population.  (5) The wage gap refers to the higher wage rate offered
by the urban sector resulting in rural migration to cities.  (6) The
equity gap implies that formal schooling does not offer educational
opportunity to all; only the privileged go to school and they
participate longer as costs increase with the level of education.

(7) The

makes it

(8) The

individu

to outru

migratio

search o

Pl

an alter

a dynami

cannot,

emphasis

control

Su

depends

itself.

not atta

arrangem

may be e

its impl

administ

economic

fails to

La

difficul

(7) The <u>adaptability gap</u> refers to the rigidity in the schools which makes it difficult for them to respond to social and economic needs. (8) The <u>evaluation gap</u> arises because of difficulty in assessing individual performance on the job since workers' skills are likely to outrun supervisors'. (9) The <u>expectation gap</u> is reflected in migration from rural to urban areas and the pursuit of education in search of jobs which are frequently not available.

Planning of the non-formal education sector can offer more than an alternative. Non-formal education, because of its diversity, is a dynamic factor in human resource development. Formal schooling cannot, perhaps, introduce this dynamic element because of its emphasis on maintenance of the status-quo, tacitly supporting elite control in the society.

Successful non-formal educational plan implementation greatly depends on the quality, realism, and practicability of the plan itself. Even in the most well conceived and soundly-based plan may not attain its objectives if there are substantial lags in the arrangements established for their implementation. A "solid" plan may be evolved by a small, well-trained and experienced group, but its implementation may involve the active participation of the whole administrative structure, the private sector, and other social and economic institutions. This is another case where "theoretically good" fails to be equivalent to "practical reality".

Lastly, in a highly structured society such as the U. S., it is difficult to sell the non-formal educational output partly because of

anxiety,

certifica

The situa

where we

essential

few educa

it is rel

such a se

schooling

organized

country w

to that c

disadvant

system.It

challenge

countries

because t

tended to

the forma

foreign a

their pre

the so-ca

issues ha

the hope

anxiety, partly because of uncertainty, and partly because of a certificate-oriented value system which has long since gained currency. The situation is different in the case of less developed countries where we find economic and social dualism. Its peasant sector is essentially based on an agrarian subsistence economy providing very few educational opportunities to the people. I have a feeling that it is relatively easy to sell the non-formal educational output in such a sector especially because there is a little or no formal schooling system in this sector. On the other hand, in the more organized industrial and modernized sector of the less developed country we find a relatively developed formal schooling system similar to that of the Western countries. This is at once an advantage and disadvantage to the introduction of non-formal education into the system. It is an advantage because the failure of formal schooling has challenged the foundations of the system in most of the less developed countries in Asia and Latin America. This is also a disadvantage because the tendency to imitate in the LDCs is strong, and they have tended to think of education only in terms of what is dispensed by the formal schools; and this has been intensified by the role of the foreign advisors who are, in most cases, imposing on the governments their preconceived notions. This makes the whole thing complex. But the so-called "crisis" in contemporary education with its many crucial issues has already given a stimulus to serious inquiry. Herein lies the hope for non-formal education.

SECTION III

## INVESTMENT CRITERIA IN NON-FORMAL EDUCATION

1. Introduction

   a. Nature of investment in human capital
   b. Importance of investment criteria and objectives

2. Conceptual Problems of Cost Estimation:

   a. Opportunity cost
   b. Fixed, variable and marginal costs
   c. External costs
   d. Shadow prices
   e. Joint costs

3. Conceptual Problems of Benefit Estimation:

4. Basic Investment Criteria:

   a. Present value approach
   b. Benefit cost-ratio
   c. Internal rate of return
   d. Break-even time

5. Problems of Application of Investment Criteria:

   a. General problems
   b. Inherent problem
   c. Specific problem

6. Cost-Effective Analysis and Non-Formal Education:

7. Conclusion

Investmen

C.

in an eff

factors s

for consu

there are

definitic

the three

consumpti

considere

that labc

and litt.

expendit

expendit

investme

human be

capital

activity

a form c

such as

Free Pre

1.  Introduction

Investment in Human Capital:  Its Nature

Capital is frequently defined as "produced means of production" in an effort to distinguish it (1) from non-produced and non-reproducible factors such as land and (2) from produced goods to be utilized entirely for consumption.  Conceptually, there is little problem in this, but there are severe problems in utilizing operationally so simple a definition.  Classical, traditional economists viewed people as one of the three factors of production - land, labor, capital - and their consumption as the end purpose of economic activity.  Thus, labor was considered separately from capital although very early it was discerned that labor ought not be treated analytically as a homogeneous factor, and little attention was given until recently to the economics of expenditure on the improvement of "homo sapiens" as a capital expenditure.  The prevailing tradition, the difficulty of isolating investment from consumption, and the moral implications of viewing human beings as capital discouraged complete acceptance of the human capital concept.[1]  Economists considered men as the ends of economic activity, not - except in the case of slavery - as capital goods, a form of wealth augmentable by investment.  A few classical economists such as W. Petty, Malthus, Adam Smith, Marshall, and Fisher emphasized

---

[1]T. W. Schultz, Investment in Human Capital, New York:  The Free Press, 1971, pp. 48-62.

the need

were cost

capital (

added inc

on human

the nation

O

and others

have poin

the mains

economics

of econom

of rapidl

relation

seems to

developme

B

increasin

society.

capital f

developed

programs

2

Capital,

3

Assessing

Alternativ

the need for investment in human capital by noting that (1) "there

were costs associated with the development and formation of human

capital (largely education), (2) the output of skilled human resources

added incrementally to the national product, and (3) expenditures

on human resources which increased the national product also increased

the national wealth."[2]

Only recently in the early 1960's, economists such as Schultz

and others have rediscovered the importance of human resources and

have pointed the way toward incorporating investments in education into

the mainstream of economic analysis. Thus, current interest in the

economics of investment in education "...reflects the general concerns

of economists and educators: The economic efficiency implications

of rapidly growing expenditures in the education industry and the

relation of human capital to economic growth and development."[3] There

seems to be a consensus among economists on the need for human resource

development.

Broadly speaking, human resource development is the process of

increasing knowledge and the critical skills of all the people in a

society. In socio-economic terms, it is the accumulation of human

capital for social and economic advancement. Human resources are

developed by formal education, through systematic non-formal training

programs in employing institutions or training on the job, in adult

[2]R. A. Wykstra, (ed.). Education and the Economics of Human Capital, New York: The Free Press, 1971, p. 3.

[3]F. H. Harbison, op. cit., p. 11, also see W. G. Bowen, Assessing the Economic Contribution of Education; and Appraisal of Alternative Approaches" in Three Essays, Princeton, New Jersey, 1964.

education

social, cu

as by the

and magnit

practice f

estimate t

produce t

formation

additiona

how to di

investmen

practical

Expenditu

the capab

expenditu

underlyin

expenditu

are in th

Thus, the

measureme

human inv

there is

4

education programs, and through membership in various political,

social, cultural and religious groups, or within the family, as well

as by the process of self-development. How can we estimate the volume

and magnitude of human investment? Schultz[4] maintained that "the

practice followed in connection with physical capital goods is to

estimate the magnitude of capital formation by expenditures made to

produce the capital goods. This practice would suffice also for the

formation of human capital. However, for human capital there is an

additional problem that is less pressing for physical capital goods;

how to distinguish between expenditures for consumption and for

investment. This distinction bristles with both conceptual and

practical difficulties. We can think of three classes of expenditures:

Expenditures that satisfy consumer preferences and in no way enhance

the capabilities under discussion – these represent pure consumption

expenditures that enhance capabilities and do not satisfy any preferences

underlying consumption – these represent pure investment; and

expenditures that have both effects. Most relevent activities clearly

are in the third class, partly consumption and partly investment.

Thus, the task of identifying each component is formidable, and the

measurement of capital formation by expenditures is less useful for

human investment than for investment in physical goods. In principle,

there is an alternative method for estimating human investment, namely

---

[4]T. E. Schultz, "Investment in Human Capital", _American Economic Review_, Vol. 51, (1961) pp. 1-17.

by its yiel

by human in

be sold, it

the wages a

in earnings

Th

expenditur

of both ar

between in

make the c

schooling

is general

education

immediatel

analysis n

Investment

"I

evaluation

formal or

appreciate

Pu

vary betwe

as 6 per c

examined h

management

by its yield rather than by its cost. While any capability produced by human investment becomes a part of the human agent and hence cannot be sold, it is nevertheless "in touch with the market place" by affecting the wages and salaries the human agent can earn. The resulting increase in earnings is the yield on the investment.

The difficulty of separating investment from consumption expenditure exist both in formal and non-formal education. The outputs of both are intangible in nature but there is a significant difference between investment in formal and non-formal education which tends to make the conceptual problem a bit easier for the latter. Formal schooling generally involves a long gestation period and furthermore is general in nature rather than a job or task specific. Non-formal education on the other hand, frequently produces an output to be used immediately and in a specific task. This makes the identification and analysis much easier.

## Investment Criteria:

"Investment" criteria in education are important because program evaluation is a principal component of the economics of education, formal or non-formal. It is an aspect of education not properly appreciated in the LDCs.

Public expenditures in education -- formal and non-formal -- vary between countries from as little as 2 per cent of GNP to as much as 6 per cent. But this is not of immediate concern. The issue to be examined here is not the shortage of resources but rather that of their management. A prime example of this is performance of investment in

educa

creat

of la

train

rathe

evalu

amoun

forma

howev

analy

pract

appro

may

educa

agri

need

be d

esti

education in, for example, Bangladesh, Pakistan, Thailand, which creates a paradoxical shortage-surplus problem. There is a shortage of labor with "critical" skills but a surplus of persons highly trained for whom no positions exist.

The fundamental problem is not the lack of resources but rather their proper _allocation_ and _management_. Basically, this involves evaluation -- estimation of the desirability of utilizing specified amounts of resources in given programs whether they be formal or non-formal programs. This involves the appreciation and proper application, however difficult, of various investment criteria (e.g., cost-benefit analysis).

But "the manpower approach is frequently utilized as a practical substitute for the more intellectually respectable returns approach."[5] It is true that through application of this approach, it may be possible to determine with much precision the non-formal educational need of the different sectors of the economy such as agriculture. This given target of agricultural growth, the manpower need of the sector such as extension agents, agronomists, etc., may be determined. But we cannot avoid the problem of costs and benefits estimations. Thus, Professor Hunter[6] comments:

_____

[5]John M. Hunter, _Economic Aspects of Higher Education in Brazil_, Monograph No. 5, Latin American Studies Center, Michigan State University, East Lansing, Michigan 48823, 1971, p. 17.

[6]_Ibid._, p. 19.

in educ

the eco

2. Co

and di

The target for an expansion of agriculture (or manufacturing) implies a decision about priorities and allocation and measurement of various expected results against national goals. The development of certain targets for agriculture, for industries, for public transportation implies some analysis of expected <u>costs</u> and expected <u>returns</u>. This may be done explicitly with careful attention to costs and expected returns or it may be done "hopefully".

The manpower approach at best gives the impression of precision and produces exact numbers, and it appears to take a direct route to responding to the appropriate questions. But it really can not avoid the comparison of costs and returns.

It is now evident the proper application of investment criteria in education is of supreme importance, because education as a sector of the economy has to compete for funds with other sectors of the economy.

The objectives of this section are:

(a) to provide a conceptual basis for cost-benefit components and cost-effectiveness analysis as applied to non-formal education;

(b) to examine various investment criteria as applied to education;

(c) to consider the suitability of the investment criteria with particular reference to LDCs.

## 2. Conceptual Problems of Cost Estimation:

The conceptual and methodological issues involved are several and divisible as follows:

(a) opportunity costs;
(b) fixed, variable, and marginal costs;
(c) external costs
(d) shadow prices
(e) joint costs

## Opportunity Cost:

Costs were viewed historically by the classical economists[7] as "real" costs or production in terms of producers' efforts, sacrifices, or disutilities. "Real" costs were unrelated to consumer preferences or tastes. On the other hand, the neo-classical Austrians held that the cost or value of resources used (with a given supply) was essentially derived from market demand, independent of the "real" cost experienced by the producer. This is an important distinction since it leads to a view of costs as stemming from the prices of productive factors in their various uses. That is, costs are the sum of the factor prices which, in turn, depend upon whatever it is they can earn in the various activities in which they participate. Thus, Austrians[8] viewed costs as real costs of forgone resources rather than merely 'money' or 'funds' being used. Economists speak of this as the social opportunity costs of a resource in a particular use which is equal to what the resource could earn elsewhere or the maximum value of its contribution forgone by using it in a particular manner. The cost of an education program can helpfully be considered from this viewpoint.

------

[7]The classical economists such as Acam Smith, Ricardo, Mill, Bentham, are those who in the period 1750-1850 first formulated a systematic body of economic principles.

[8]The Austrian school flourished during the later years of the 19th century. The concept of marginal utility -- a very important concept in economics had its origin in Austria. Writers such as Karl Menger, Jevons of England, Walras of France helped develop this concept are generally regarded as being of the Austrian school.

An example may make clear the distinction between "money" costs and "opportunity" costs. Suppose several intellectuals are employed at $2,000 per year to teach in a foreman training class. If there is a surplus of teachers at this rate, those in excess would otherwise be unemployed or work as common laborers at $400. The money cost of their employment is $2,000, but the opportunity cost is only the value of what they otherwise would have earned (produced), i.e., $400. Thus opportunity costs may be interpreted in terms of what a worker would produce elsewhere (i.e., his marginal product) or in terms of what he could earn elsewhere.

Khatkhate[9] points out that when opportunity cost is defined with reference to marginal productivity, the principle requires full employment of resources which, in its turn, implies utilization of all alternative sources of resources. But when interpreted in terms of alternative earnings, "the principle of opportunity cost becomes applicable to situations of unemployment, under-employment and disguised unemployment and at any level of marginal productivity. The alternative earnings of labor are determined by "alternative compensation" and "alternative consumption" from the viewpoint of employer and society respectively. Interpreted thus the social opportunity costs would be zero if the newly employed worker was willing to work at his previous level of consumption whereas alternative compensation of labor is

_____

[9]R. D. Khatkhate, "Opportunity Cost and Its Application to Underemployment," Social Research, Vol. 28, No. 1, (1961), pp. 60-70.

always positive if the worker is even hypothetically employable. This
resultant divergence may have underestimated the need for labor intensive
techniques in LDC's.

It is extremely important to understand the implications of
opportunity costs (i.e., benefits foregone and vice-versa), but this
is not simple since there are areas in cost analysis which involve more
than just straight-forward cost accounting. Stromsdorfer[10] identifies
two particular problems, (capital costs and joint costs) for which major
problems of measurement exist.

Capital costs cause problems because they are incurred at one
point in time but their services are utilized through a long period -
several accounting periods. The "value" of these services to be
imparted as costs in each accounting period is the issue of capital
costs, and Stromsdorfer identifies four means of valuing the capital
stock especially the physical plant and buildings assuming they existed
prior to the beginning of the program being costed: (1) if there is
no alternative use, there is no social opportunity cost, (2) historical
costs may be used, (3) replacement cost may be used, and (4) some
current assessed valuation may be used. Once a particular valuation
is selected, then the capital cost for the accounting period is
determined by someone of several "depreciation" techniques which tries

_____

[10]Ernest W. Stromsdorfer, "Occupational Training Programs and
Manpower Programs for the Disadvantage: Discussion," Cost-Benefit
Analysis of Manpower Policies, Proceedings of a North American
Conference, May 14-15, 1969, ed. by E. G. Somers and W. D. Wood under
the auspices of Center for Studies in Vocational and Technical
Education, the University of Wisconsin and Industrial Relations
Centre, Queen's University.

to estimate and take into account the portion of the assets "used up" in the period. Different methods of asset valuation are used depending on the purposes for which data are sought, the law, standard accounting techniques, and personal biases similarly determine different depreciation techniques which are employed. Both procedures are ultimately arbitrary and burden the ultimate cost figures with their arbitrariness.

Joint costs arise when a specific facility contributes to the production of two or more outputs even in some cases the same output in different time periods. A building may serve one group in the morning (primary school), a secondary school in the afternoon, and five different non-formal education groups in the evening. How does one allocate or impute the known total cost to each of the seven programs? This is no new problem, either, nor is it unique to education. Its solution again involves an arbitrary element, but this cannot be avoided since ultimately "costing" must be done if competitive programs are to be evaluated in terms of these costs and returns. Stromsdorfer summarizes as follows:

> Even if the true economic value of the capital resources in use has been measured, the problem still remains as to the measurement of the rate at which the given capital stock is used up over the course of the investment process when more than one cohort of subjects employs the capital stock. Two courses of action have been suggested for use. One is to attempt to measure an imputed rent to the capital stock by making analogies with respect to what amount of rent (i.e., return on the capital investment) the capital item would yield if it were being employed in its next best alternative use. But such a technique is subject to a great deal of arbitrariness and uncertainty.
>
> In order to get a measure of the rental opportunity cost it is necessary to go to the market place and attempt to identify capital resources which represent alternatives

to the resources employed. This will allow one to determine
the value of foregone alternatives. But, again, any imputed
rent based on market observations will most likely overstate
the value of the committed capital, since it is unlikely
that the capital on which the rent imputation is based will
be a perfect substitute for the educational capital in
question. Thus, a great deal of judgement is involved in
adjusting the observed market prices so that they more
closely reflect the true opportunity costs.

An alternative technique for estimating the rate of capital
use lies in employing the "capital recovery factor". The
application of this technique automatically accounts for
rent.

The major problem with the capital recovery factor is that
it only states the level annual return (rent) needed to
recoup the principal and social opportunity cost, that is,
interest, given the life of the capital in question. The
actual amount of capital used up in any given year could be
the same, more, or less than this amount.

In conclusion, however, it must be noted that physical
capital costs are usually low relative to all other
opportunity costs. Thus, the relative error or bias which
can result from the use of an inappropriate measurement
technique may often not be large.[11]

The question of cost measurement can be further complicated by

noting the theoretical need to incorporate leisure in calculations of

costs. Earnings foregone are a part of the cost of education, but so

also is leisure foregone. How, if at all, can leisure be valued? "One

way to pay for education may be to take less leisure than would have

been taken had the individual taken a job not involving education.[12]

---

[11]Eanest W. Stromsdorfer, Ibid., p. 153-154.

[12]Jack Wiseman, "Cost-Benefit Analysis in Education", Southern
Economic Journal, July, 1965, p. 1-14. Also reprinted in Human Capital
Formation and Manpower Development: ed. R. A. Wykstra, The Free Press,
New York, Collier-Macmillian Limited: London, 1971, p. 185.

However justified may be the incorporation of such costs, practicality makes this nearly impossible.

## Fixed, Variable and Marginal Costs:

There are good reasons to distinguish between fixed, variable, and marginal costs of a program.[13] The fixed costs are those costs which magnitude do not vary with the level of output, at least within some reasonable range. For example, the rent of an adult education center would likely be constant whether the center is running at half or full capacity. Variable costs are the sum of the amounts spent for those inputs which do vary with output. The cost of chalk used, for example, would be directly related to the amount of teaching done (although not necessarily to the number of students). If there is zero output, no units of the variable inputs need be employed (e.g., use of TV time). Summing variable costs and fixed costs provides total cost.

---

[13] There are often several ways of combining resources to achieve a given output, but only one way results in the lower cost. The cost function describes the minimum costs of producing various rates of output derived from production and factor: supply functions. Let the cost function be $C = F + v(Q)$. Where $F$ = total fixed cost, $v(Q)$ = total variable cost associated with each level of output. Thus, the average fixed cost associated with each level of output. Thus, the average fixed cost is $F/Q$ and its slope = $-F/Q^2$. Average variable cost is $\frac{V(Q)}{Q}$ and its slope is:

$$\frac{VQ'(Q) - V(Q)}{Q^2} = \frac{1}{Q} \left[ v(Q) - \frac{v(Q)}{Q} \right]$$

TC and TVC are parallel graphically, in the sense that the slopes of the two curves are the same at every output point. At each point, the two curves are separated by a vertical distance of $100, the fixed cost of the program.
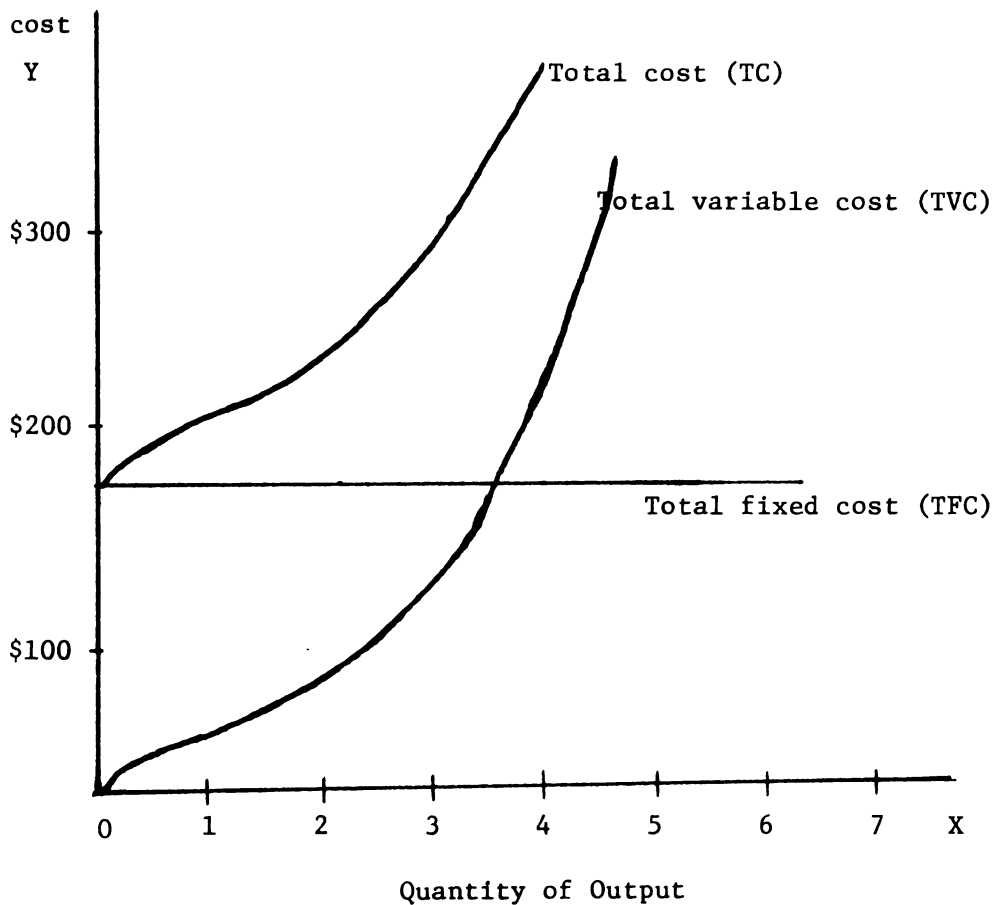


Figure - 1 Relation between TC, TVC and TFC

Richard Judy[14] notes the following:

_____

[14]_Cost-Benefit Analysis of Manpower Policies_, Proceedings of North American Conference, May 14-15, 1969. ed. G. G. Somers and W. D. Woods, Industrial Relations Center, Queens University, Canada, p. 24.

> If we accept the opportunity cost concept, we become solely interested in costs that are <u>avoidable</u>. If there are fixed costs that must be incurred irrespective of which alternative is selected, those fixed costs have no place in our cost-benefit comparisons of alternatives. This is true even if our <u>budgeting</u> must provide for total including fixed costs.
>
> Closely related to the idea of avoidable costs is that of <u>incremental</u> (or marginal) costs. If we are costing an expansion or contraction of an existing program, it is important not blithely to assume equality of average unit costs (AUC) and incremental costs (IC). For various reasons (e.g. economies of scale, fixed facilities in the short run), there may be considerable difference between AUC and IC.
>
> My limited observations of cost-benefit analyses in the field of manpower retraining and vocational education lead me to conclude that incremental costs are not measured. I know that the better known studies of costs in higher education concentrate on their attention only on total and average costs. The implicit assumption of these studies seems to be that costs are a linear and homogeneous function of the number of students educated. The results of our own studies are not consistent with this assumption.

It seems that Professor Judy is working under the implicit assumption of equal fixed costs for alternative programs. If this is not correct, then fixed costs have to be taken into consideration in cost-benefit comparisons of alternatives.

Careful analysts are, however, aware of the existence of "spill over" costs -- sometimes referred to as "external costs" arising out of the phenomenon of "externality".[15] This situation arises when the implementation of a program results in costs associated with the program but not borne by it. The inauguration of a non-formal mechanic's training

---

[15] J. R. Buchanan & W. C. Stubblebine, "Externality", <u>Economica</u>, Vol. 29, No. 166, (Nov. 1962), pp. 371-384.

center in a small community might so increase the demand for potential

teachers that their wages would rise to include wages of those teaching

in the formal vocational high school.  In this case, the cost of non-

formal program is appropriately not only the sum of its input costs,

but also the increased costs of previous instruction in the formal

program.  External costs vary greatly in importance and difficulty of

estimation.  It is important to be alert to their existence and to

estimate them when they seem likely to be significant.

Shadow Prices:

A clear distinction between market and shadow prices is necessary

for proper estimation of costs of non-formal education programs.  Market

prices occur when a free exchange of a good or service establishes a

price.  These prices are explicit, but under some circumstances these

explicit market prices may not adequately best serve the purposes at

home, and "shadow prices" are used instead.[16]  In imperfect markets,

where there are constraints on resource use, market prices may not

accurately convey information concerning substitution possibilities.

Suppose, for example, that teachers are highly unionized, that they

bargain collectively, and that they restrict entry into the profession.

The market price might be 10,000 monetary units per month, but some

portion of this represents the return from the exercise of monopoly

---

[16]Roland N. McKean, "The Use of Shadow Prices," <u>Problems in Public Expenditure Analysis</u>, ed. by S. B. Chase Jr., Washington:  The Brookings Institution, 1968, p. 33-77-

power rather than the value of resources foregone in other uses. Thus, a shadow price might appropriately be used by a government or implementing agency seeking to achieve economic efficiency. Thus, "shadow prices" are those prices substituted for market prices when there is good reason to think the substitute more adequately represents the "cost" than the market's evaluation. They are frequently used, too, when "artificial" exchange ratios obtain. Suppose, for example, that television sets are to be imported from abroad for a non-formal educational project in Bangladesh. At the official rate of exchange they are valued at 1500 rupees each ($200 U. S. X 7.5 rupees, the 1973 official exchange rate). Now if a dollar in fact is worth 12 rupees, then each television set at the more realistic exchange rate is 2400 rupees each ($200 U. S. X 12 rupees). Costing the program might very well substitute the "shadow" price of 2400 rupees per set for the "actual" price paid if the cost to society is what is being examined.

According to McKean, shadow prices may be derived through:

(a) programming techniques which highlight appropriate substitutions

(b) the prices of similar goods within internal and international markets

(c) the prices used by other governments for similar goods

(d) adjusting market prices to allow considerations which are not reflected in market prices.

The fact is that any set of prices used for the purpose of benefit cost analysis will be imperfect. What is most important is to ask which set of prices is best and most easily obtained. Market prices have the

great advantages of _existing_ and _being objective_. Shadow prices by their very nature are subjective and arbitrary. It is clear that their use should be restricted to cases in which market prices are clearly inappropriate and in which the direction and magnitude of the "connection" is known.

## Joint Costs:

The existence of joint costs immensely complicates cost estimations since joint costs involve two or more objectives being _inseparately_ served by the same process. A set of learning materials, for example, might serve for vocational high schools, teaching training, and non-formal tool maker programs. How does one allocate the total costs of the preparation of the materials among the three separate programs? There are devices of varying degrees of arbitrariness and sophistication for making such allocations. But, in the end, they are estimations involving arbitrary allocations, frequently leaving much to be desired with respect to accuracy.

This sums to the fact that it is hardly possible to estimate costs of any non-formal education program with certainty. The existence of non-predictable and non-controllable variables make the cost estimations complex. Some sets of problems would be alleviated if only we had probability estimates for the variables.

We turn now to benefit estimation, a concept more difficult to deal with in theoretical and empirical terms than are costs.

3.Conceptual Problems of Benefit Estimation:

Benefits of a program depend ultimately on its success in meeting its objectives. Measuring those benefits depends, in turn, on a clear statement of objectives in quantifiable terms and a means of valuing those outputs. The problem is the same conceptually for either formal or non-formal education programs, but the former has a short-hand standard in terms of "years of schooling" which frequently permits the avoidance of defining objectives and measuring successes. Objectives may be cast, for example, by national constitutions in terms of "six years of free schooling for each child" which has meaning only if the content of each year is defined. There is a general understanding that a day is X hours of instruction (each of which is _assumed_ to accomplish _something_) and that y days constitute a school year. It is clear that this use of the short-hand "measure" really is a device to avoid measuring output at all since it depends solely on the enumeration of the input to be altered by the productive process.

Non-formal education is so varied in format and delivered in such a non-standard package that no short-hand definition of objectives is possible. Objectives can be considered on two levels. The first involves conceptualization and would involve specific statements about what is expected to occur to the person subjected to the training. It might be designed to convert mechanics into master mechanics (the two being somehow distinguished) or to make foremen of line labor or to improve the capacity of the chicken grower by 20 percent. It is possible to imagine, at least, that values might be put on these accomplished

objectives in one way or another. The social objectives sought are
much more difficult to handle since they usually incorporate one or
more of the following:[17]

1)  greater <u>allocative efficiency</u> seeking an efficient educational
    and manpower program in terms of training, mobility, placement;
    thereby reducing the job gap between employment and education;

2)  enhanced <u>economic stability</u> and lessened unemployment,
    thereby reducing social tension and population gap;

3)  improved <u>distributional equity</u> so as to provide equal
    educational opportunity, to shift the distribution or
    income in favor of the disadvantaged, thereby reducing
    equity gap.

Benefits from educational investment are by nature intangible and
take on different values depending on the point of view -- that of the
employing institution, the laborer, government, or society. The root
of the problem arises out of a clash of interests which are fundamental
and opposed.

Even if these sets of problems to costs and benefits can be
solved and reasonable estimates of each can be made, additional problems
confront the decision-maker (although he has surely made great progress).
These problems arise from the selection of the <u>best</u> use of <u>limited</u>
resources among several alternatives. In order to get at this matter
of choice, the following are needed:

---

[17]Burton A. Weisbrod, "Benefits or Manpower Programs Theoretical
and Methodological Issues", in <u>Cost-Benefit Analysis of Manpower Policies</u>,
ed. by G. G. Somers and W. D. Wood, Industrial Relations Center, Queens
University, p. 14-15.

1) specification of objectives as far as possible,

2) determination of the constraints, financial, legal, administrative,

3) elaboration of feasible alternatives,

4) measurement of costs and benefits of feasible alternatives, and

5) application of investment or allocative criteria for final selection of projects.

## 4. Basic Investment Criteria:

Some basic criteria are explored below as guides in decision-making in educational projects:

A)  present value approach:[18] According to present value or the discounted value approach, those non-formal educational projects should receive allocation when their present value of benefits exceeds the present value of costs.[19]

---

[18]Algebraically, the formula for determining the present value (v) is as follows:

$$V = \frac{R_1}{(1+i)} + \frac{R_2}{(1+i)} + \ldots \frac{R_n}{(1+i)} \quad n$$

Where = R= expected return
i= interest rate
n= time period when no return is expected

[19]we may write the rule as follows:

$$\frac{x_1}{(1+i)} + \frac{x_2}{(1+i)} 2 + \ldots \frac{x_n + s}{(1+i)} > \frac{y_1}{(1+i)} + \frac{y_2}{(1+i)} 2 + \frac{y_n}{(1+i)} \quad n$$

Where= $x_1$, $x_2$ -- and $y_1$, $y_2$ series of benefits and costs in successive years respectively;
i= interest rate
s= scrap value in terms of physical facilities, if any.

If we know R and i, we can deduce V; similarly, if knowing V and R, we can find out i. Of the four variables V,R,I and n, V and i are unknown. The determination of i is always a problem.

The conceptual difficulty here is that most costs are incurred in the present and most benefits are received in flow through the future. Costs are relatively simple to handle - outlays plus all anticipated interest payments (discounted). "Present value" attempts to give a simple figure comparable to present cost. Imagine as asset (project) which will produce a stream of values over the next twenty years - say to keep matters simple, $100,000 per year each year. The present value of $100,000 now is just that; the $100,000 to be earned next year is $100,000 - $7,000 = $93,000, if the rate of interest is 7 percent. The $100,000 to be earned in year 2 is presently worth $93,000 - $6,510 = $86,490, etc. Summing these values for as many years as there are involved gives the desired datum, present value. Its present value is greater than present costs, it should be clear that the investment is warranted - at least - in the sense that its benefits exceed costs, but this does not necessarily qualify vis-a-vis other positive return projects.

In this simple example costs (other than interest) are all considered as present and known. In educational projects, a high proportion of costs are variable and are thus incurred over time. This means that they, too, must be estimated and discounted.

Returns in the real world are not given as in our example, but must be estimated as discussed above which makes the process much more complex than a simple arithmetic example suggests. The stream of returns through time from educational investments is difficult to estimate - and that from non-formal education particularly so. We

can, however, conceive of an important distinction between formal and non-formal educational projects so far as the stream of returns is concerned.  <u>In the case of formal schooling the stream is negative during the years of schooling as a result of foregone income and tends to be positive during the period of earning.  But in many situations non-formal education (e.g. learning by doing and looking) involves no marginal costs, so that the stream is positive during the years of learning</u>.

This can be graphically demonstrated as follows:

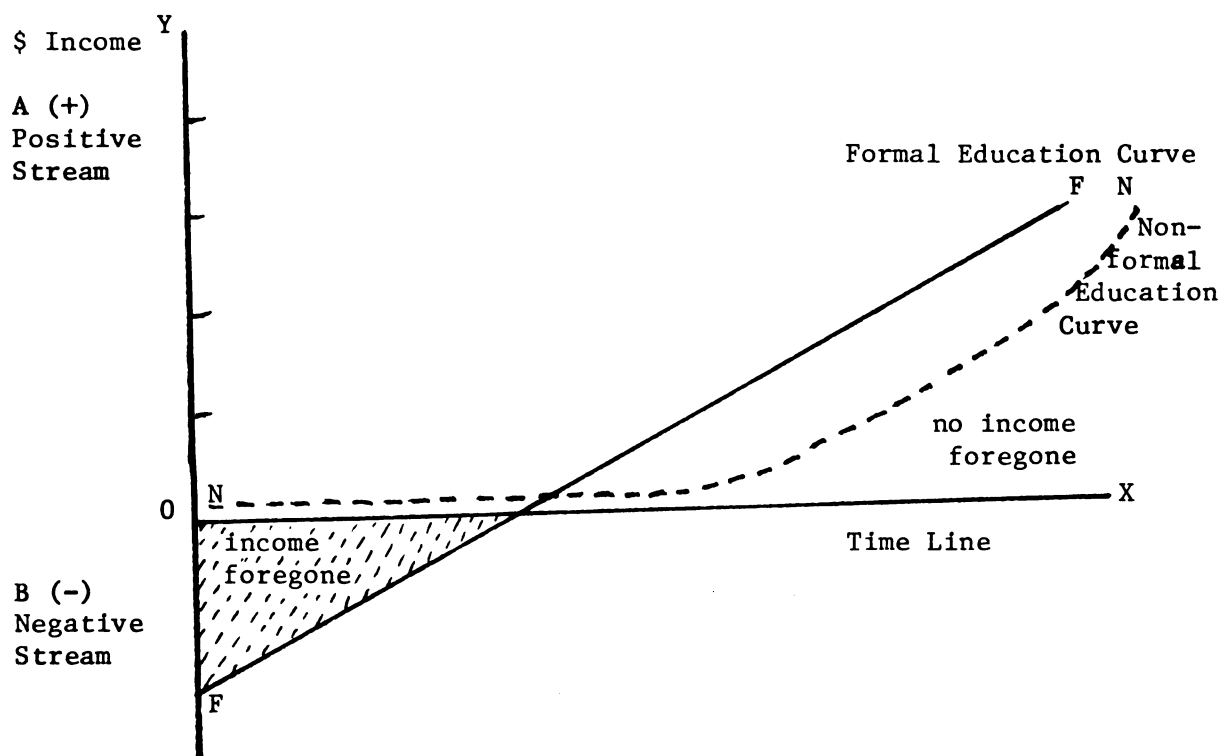

Figure 2:  Positive and negative income stream in respect to formal schooling and non-formal education.

X   axis represents time (e.g., years)

Y   axis represents income

FF  Line shows both negative income (i.e. income foregone during the years of school attendance) and positive income

NN  Line represents earning and learning together; earning is less initially, but eventually it picks up

(B) Benefit cost-ratio: The benefit cost-ratio criterion is closely associated with the present value approach. According to this approach, all non-formal projects are fundable where the ratio of the present value of benefits to the present value of costs exceeds unity.[20] Professor Hardin made a comparison of recent studies of benefit cost analysis of occupational training programs. He reports *positive, zero,* and *negative* cost-benefit ratio for training classes of *short, medium,* and *long* duration respectively.[21] Theoretically, there is no problem of accepting positive and zero cost-benefit ratios. Essentially this means, with positive costs in the denominator, that the benefits are zero and for a negative ratio, the nominator (benefits) are negative. Stromsdorfer[22] finds it difficult to rationalize Hardin's report of negative cost-benefit ratios for two reasons: First, a negative benefit cost ratio implies reduction of the trainee's marginal productivity. It is possible that recurrent failure to learn a skill could seriously

---

[20]Although it is difficult to quantify the subjective element of costs and benefits arising out of any non-formal education program, we may write the rule algebraically as follows:

$$\frac{\frac{x_1}{(1+i)} + \frac{x_2}{(1+i)^2} + \cdots + \frac{x_3 + s}{(1+i)^3}}{\frac{y_1}{(1+i)} + \frac{y_2}{(1+i)^2} + \cdots + \frac{y_3}{(1+i)^3}} > 1$$

Where $x_1, x_2 -- x_3$ and $y_1, y_2 --y_3$ series of benefits and costs in successive years respectively; i=interest rate; s=scrap value in terms of physical facilities, if any.

[21]Einar Hardin, "Benefit-Cost Analyses of Occupational Training Programs: A Comparison of Studies," Cost-Benefit Analysis of Manpower Policies, Proceedings of a North American Conference, May 14-15, 1969, ed. by G. G. Somers, W. D. Wood. Published jointly Industrial Relations Center, Queens University, Kingston, Ontario, and the Center for Studies in Vocational and Technical Education, the University of Wisconsin, Madison, Wisconsin, 1969, p. 97-118.

[22]Ernest W. Stromsdorfer, op. cit., p. 157.

reduce a subject's morale and that his past skill could even deteriorate, relative to a person not undergoing training.

> This depreciation is a result of foregoing on-the-job experience and is an opportunity cost of taking part in the retraining. The question becomes, at this point, whether to call this depreciation a positive cost or a negative benefit. Which course of action one takes is essentially arbitrary. If, for instance, all other specified benefits (negative costs) are zero and depreciation is positive and defined as a negative benefit (positive cost), then the result will be a negative cost-benefit ratio. However, if one chooses to define this depreciation as a cost (negative benefit) and, if, for instance, all other benefits (negative costs) are zero, then the cost-benefit ratio will be zero.[23]

The question becomes essentially an empirical one as to how quickly do human skills depreciate? Another possible explanation for the negative benefit cost ratio is that the control group is inappropriate in the sense that the utility weights a workman undergoing retraining attaches to his wage rate are different from those implicitly or explicitly assumed by the analyst. Stromsdorfer finally concludes that Hardin's negative benefit cost ratio results from either "a mis-specified regression model, an inappropriate control group, or both."

(C)  **Internal rate of return:**

The internal rate of return is another approach of investment criteria within the framework of cost-benefit analysis. According to this approach, all non-formal education projects or programs are fundable where the internal rate of return exceeds the chosen rate of discount. In the case of on-going projects, attempts should be made to maximize

---

[23]Ibid., p. 158.

the rate of return.[24]

This approach aims at calculating the internal rate of return which is that rate which equates present value of benefits and costs. This discount rate can be compared to some rate of return which is to represent the social opportunity cost of public capital. In this connection the distinction between the private and social discount rate are necessary for the purpose of effective evaluation of the public sector's investment alternatives. In a perfectly competitive capital market, there is no problem in the sense that there exists only "one interest rate for all risk-free loans for any given maturity."[25] But the imperfections of capital markets have given rise to two further concepts of interest rates: (a) the social rate of time preference and (b) the opportunity costs of public capital. The social rates have been derived from...

> ...theoretical models of economic growth and postulated functions for the marginal utility of consumption over time. It is usually inferred from this literature that the rate of social time preference is low; that is, that

---

[24]That is, $\dfrac{x_1 - y_1}{(1+r)} + \dfrac{x_2 - y_2}{(1+r)^2} \cdots \cdots \dfrac{x_n - y_n}{(1+r)^n} = 0 = \sum_{n=1}^{n} \dfrac{x_n - y_n}{(1+r)^n} = 0$

Where r= internal rate of return; x= earnings before or after tax; y= cost of education; n= time, age, etc.

[25]Otto Eckstein, "Interest Rate Policy for the Evaluation of Federal Programs," in Human Capital Formation and Manpower Development, ed. by R. A. Wykstra, New York: The Free Press, 1971, p. 151.

the planner's interest rate should be low, giving full weight to the welfare of future generations and overriding the myopic desires of present individuals.[26]

On the other hand, the opportunity cost for public capital is the discounted value of the flow of returns from the best use of public funds, implying that new investment projects should have yields equal to or larger than this value.

While discussing the issues involved in using an appropriate discount rate, Eckstein recommends that in cost-benefit studies the discount rate should reflect the opportunity cost of public capital. His theoretical solution to the problem of the choice of interest rate for public investment planning is as follows:[27]

1. Identify the actual opportunities that are foregone and measure the flow of returns that would have been earned in the alternative use;

2. Apply the social rate of time preference to derive the present value of the returns foregone in the alternative use;

3. Undertake only those public investments which yield more present value per dollar expenditure than the foregone alternatives. This formulation, which I sketched in my book, Water Resource Development, translates into U.S. government practice as follows:

   1. Apply the social time preference rate of interest in the valuation of projects; but

---

[26]Ibid., p. 152.

[27]Ibid., p. 153.

2. Compute the benefit-cost ratio of the foregone opportunities in the private or public sector. If the interest rate is very low, if we assume the social time preference to very low, the benefit-cost ratio of the foregone opportunities will be very high.

3. Undertake those public projects which have a benefit-cost ratio greater than the benefit-cost ratio of the foregone opportunities.

Despite these theoretical and practical applications, finding the chosen rate of discount for non-formal education projects presents a serious difficulty when the non-monetary consumption benefits and "spill-over" benefits of non-formal education are taken under consideration. Even in monetary terms, the chosen discount rate may not hold good over time either in a technological society or in LDCs. This problem is further complicated because of the problem involved in cost and return estimation. But given cost and return, the problem of finding the rate of discount becomes relatively easy.

Break-even time:

In economics, we reach a break-even point at the level of output at which a firm's total revenue equals its total costs so that its economic profit is zero. Total cost, of course, includes normal profit - that is, the earnings possible for these resources in alternative uses. We can, however, introduce the element of time in the measurement of monetary costs and benefit. Suppose we have arranged a re-training program for a group of unemployed people. When this group of trainees worked for twenty four weeks, the trainee is expected to repay the cost of the training - another kind of break-even point for the investment made. Thus by definition, the break-even time is the time from which

the accumulation of some of the net values exceeds unity (e.g., $(x-y) > 1$, whereas "x" represents benefits and "y" indicates costs). Put another way, we should select those non-formal education projects where the break-even time is smaller than a time "t" fixed in advance. This investment criterion enjoys official favor in the Soviet Union and in the countries of Eastern Europe.[28] Bateman[29] employed the break-even analysis for evaluating the work-experience component of the programs which seek to increase the employment and earning capacity or potential of the recipients of public assistance which are transfer payments for which no repayment or return is expected. He argues that the social and economic returns related to an individual's participation in a training program may be different. Since it is virtually impossible to estimate the factors by which these two benefits – social and individual – of the program should be adjusted, break-even analysis is applied: the ratio of the marginal or incremental costs and the estimated present or discounted values of the future earnings of additional participants in the program indicates how much increase in earnings would be necessary for the program to break even.

---

[28] U. E. Malinvand, "Interest Rate in the Allocation of Resources," The _Theory of Interest_, ed by F. H. Kahn, London: Macmillian and Company, 1965.

[29] Worth Bateman, "An Application of Cost-Benefit Analysis to the Work Experience Program," _American Economic Review_, Papers and Proceedings, Vol. 57, No. 2, (May, 1967), pp. 80-90.

In brief, we have examined the four investment criteria which can be applied to non-formal education also. Turvey[30] however, noted that the correctness of any investment criterion can be discovered only by examining its consistency with the maximand or minimand. In a command economy where the rate of growth of assets is fixed prior to implementation of the program the internal rate of return approach is perhaps appropriate because time preference and social discount are irrelevant. But, the author favors the present value over the internal rate of return in view of the fact that the policy maker is not generally indifferent to the relative degree of futurity of costs and benefits. Despite the fact that the present value criterion is not very appropriate for the non-marketable type of investment concerning collective consumption decisions (e.g., a non-formal education for military purposes), it is the preferred to internal rate of return for another reason too. The comparison of the incremental or simple rate of return with any representative market interest rate may be misleading' since that rate is very likely to change over time; the present value criterion does not necessarily call for the cost and discount rate. Further, the case for the present value criterion is strengthened if a budget constraint

---

[30]Ralph Turvey, "Present Value-Versus-Internal Rate of Return, -- an Essay in the Theory of Third Best," Economic Journal, Vol. 73, No. 289, (March, 1963), pp. 93-98.

is introduced.[31] Nevertheless, controversy does exist over the most

appropriate criterion to use in decision making. As might be expected,

the use of different criterion yields different lists of fundable

programs and rearranges the order of priority for those which appear

in two or more lists. This brings us to the discussion of the problems

of application.

## 5. Problem of Application of Investment Criteria:

We have discussed the conceptual and methodological issues

concerning cost-benefit analysis in non-formal education programs.

Three types of problems emerge in the application of investment criteria

in education:

    a. The general problem

    b. The inherent problem

    c. The specific problem

The general problem arises mainly because of the lack of

professional agreement on certain basic issues. These general problems

are essentially problems of methodology. There is little consensus

among economists on the following issues:

    (a) appropriateness of the interest rate discounting long-term
        public investment,

    (b) length of observation period,

---

[31]M. S. Feldstein, and J. S. Flemming, "The Problem of Time-Stream Evaluation: Present Value-Versus-Internal Rate of Return Rules," Bulletin of the Oxford University Institute of Economics and Statistics, Vol. 26, No. 1, (Feb., 1964), pp. 79-85.

(c) appropriateness of control group,

(d) definition of social cost and benefits (i.e., externalities).

But there seems to be a general agreement in principle as to the desirability of some kind of objective analysis of investment in education. Despite this agreement in principle, the problem arises when a particular educational program is judged "desirable" by the present value approach and another analyst judges the same program as "undesirable" through the internal rate of return approach.

The inherent problem arises simply because education is essentially a social product. As such, the application of a cost-benefit approach to expenditure in education raises a host of problems of serious nature. The objections to cost-benefit analysis will be analyzed under the following five headings;

a. income

b. unemployment

c. market imperfections

d. uncertainty

e. non-economic attributes

Income

Income differentials are frequently used to measure the private benefits from educational programs - i.e., lifetime earning profiles for those with certain training are compared to profiles of those without that training. The differences in the two profiles are summed, discounted, and the result taken as the present value of the particular program to the individual or set of individuals. This seems straight

forward enough but further examination suggests a number of weaknesses:

1. Income differentials may be due only to inherent differences in the individuals involved. High income may be associated with hard work; and hard workers may be those who seek and get schooling.

2. This, at best, measures private returns. Social returns may be of much greater interest and importance.

3. Estimates of income differentials depend nearly always on measurement of last performance which may have little or nothing to do with the future, particularly in a development context.

The conundrum is viewed in other terms as follows:

For example, a training program might be instituted to convert unskilled laborers into foremen by exposing them to skills and procedures related to leadership and supervision. A testing program might differentiate between 'failures' and 'successes.' The 'successes' then can be seen at graduation as one of the inputs with the added 'increment' of exposure, practice, experience in leadership--supervisory skills and procedures. What is this increment worth? To value it on the basis of the difference in wages between foremen and unskilled workers in the plant becomes dangerously close to circular reasoning. Further, these wage differences depend on other factors such as social connections, status value, etc., There are additional problems associated with estimating the value of this increment because it cannot be dissociated from its 'holder' as he utilized it through his lifetime.[32]

---

[32]Unpublished paper on "Program Evaluation in Education" by John M. Hunter, Department of Economics, Michigan State University, East Lansing, Michigan 48823.

There is no clear way to solve this dilemma. There is a need
for adjustment of income streams for socio-economic background and
ability..."Broadly speaking, regression analysis is used to find what
differences between the average incomes of wage-earners are due to
educational variables, socio-economic variables and job related variables.
The first group of variables includes schooling and examination scores;
the second, age, tribe, and parents' literacy and father's occupation;
and the third, size and nature of the firm employing a wage earner,
his job level and whether he had received on-the-job training. The
effect of ability defined as innate intelligence cannot be satisfactorily
assessed from the survey data, but the effect of ability as reflected
in examination scores can be traced by separately analyzing data for
persons with the same education and socio-economic background who
achieve different scores."[33]

Unemployment:

We have already seen that in most LDCs there exists a gap
between employment and education. While formal schooling is producing
some unemployment in the market, it is also creating job opportunities
for some educated. Now subject to certain limitations the use of
income differentials due to additional training may be a valid measure
of benefit from the viewpoint of individuals, not from the viewpoint

---

[33] World Bank, <u>Cost Benefit Analysis in Education:  A Case Study
of Kenya</u>, Occasional papers number 14, 1972, pp. 3-4.

of society.  Once we make some kind of adjustment for total employment

it will drastically reduce the rate of return even from non-formal

education.  U. S. experience has shown that everybody is not employed

immediately on having received some kind of training and retraining

through various non-formal educational programs designed for manpower

development.

## Market Imperfections:

Cost-benefit analysis assumes that wages are a valid measure of

productivity.  But this is not a very realistic assumption.  Even if

we do not take into account unemployment in estimation, imperfection

in the labor market may result in differences between benefits a labor

is receiving and the contribution he is making.  Public sector wages

in such countries as India, Pakistan, Bangladesh are higher than private

sector wages.  Union and political pressure, existence of minimum

wages which reflect imperfections in the market and imply distortion

of minimum wages.  To correct this distortion, we should estimate

"shadow wages" which would prevail in a purely competitive and distortion

free labor market.  But we have already seen that the calculation of

"shadow" prices always is difficult.

## Uncertainty:

In a dynamic and changing economy, the input-output relationship

is always changing.  So is the rate of return to investment in man

because technical conditions are constantly changing to modify

attractiveness of occupations.  In the U. S., for example, many old

occupations disappeared due to the impact of technology.  There is no

way to solve the problem other than "wise anticipation" which, incidentally, is a great deal more than mechanical projection of the future. One may argue that for formal schooling[34] this anticipation is relatively easy compared to that for non-formal education, the magnitude of which is difficult to project due to the diversified nature.

Non-Economic Attributes:

Education is a complex social product. It may be an _investment good_,[35] raising productivity of labor or a _consumer good_, providing personal satisfaction for both parents and children. It may be a _political good_ promoting national identity and forming an informed electorate. It may be pure _social good_ in the sense of transformation of a rural society into an egalitarian society. It may be a _socio-philosophical good_ to influence attitudes, norms, and values or economic behavior. There is clear economic significance to many of these facets of non-formal education. Cost-benefit analysis can, perhaps, measure the direct economic return to education investment. But quantification

---

[34]The supply of labor can be projected by using time series extrapolations for primary and secondary school leavers, with some assumptions about growth of enrollment in different levels of schooling. Demand for labor is also projected as a function of wage and GDP (Gross Domestic Product); but elasticities can only be approximated rather than estimated.

[35]"good" in the broad sense of product to include "services".

of the values--social, indirect, political and other attributes --

is almost impossible. Education as a total social product presumably

should be the vision or view of every educational policy, but this may

not always be possible because of the difficulties of measurement.

Because of the extreme poverty levels in the LDCs, it may be permissible

to let quantifiable economic benefits represent all values. This

involves severe philosophic assumptions, but the proposition that

changes in economic welfare involves changes in the general welfare

in the same direction is proposed as an "unverified probability" by

Pigou in his fundamental work on economic welfare.[36]

One ought not to accept this proposition without being aware

of it and its implications; but failure to accept it, or something

like it, leaves he who would measure virtually unemployed.

If education can be treated more as an economic service than

a social service in terms of relieving the shortage of critical skill

and equalizing economic opportunities among all members of the society,

then the cost-benefit analysis acquires additional validity in the

LDCs by virtue of its concentration on more measurable values although

the set aside "other considerations" ought not to be forgotten in the

process.

---

[36]A. C. Pigou, The Economics of Welfare, New York: Macmillian and Company, 1932, fourth edition, p. 20.

Specific Problem:

In addition to the difficulties explained above, there are some specific institutional, methodological and conceptual hurdles in the process of application of cost-benefit analysis in many LDCs. These difficulties can be summarized as follows:

(a) Semi-educated persons in most of the LDCs migrate from rural areas to cities in search of jobs which are not readily available. The resulting "expectation gap" has created social tension and unrest, it tends to reflect the subjective rather than objective phenomenon.

(b) There is a general unawareness of program analysis in education and consequent failure to use it in decision-making in many LDCs such as India, Pakistan, and Bangladesh. This is mainly because of the constraint imposed by the annual budget cycle in which financial accountability takes precedence over the efficient utilization of resources.

(c) There is a serious scarcity of analytical personnel. Most ministries of finance are run by generalists rather than specialists. Planning operations tend to be separated from budget functions, and planning operations, too, have only recently begun to undertake the sophisticated kind of analyses being described here.

(d) The lack of data and attempts to accumulate appropriate data is always a problem of measurement of the social benefit of outputs and social cost of input.

(e) Often education is seen as political good by politicians rather than an economic good. No distinction is made between "education as an investment" and "education for the consumers".

So far we have talked about cost-benefit analysis and its problem of application in non-formal education. The whole analysis is centered around the question of efficient allocation of scarce resources. But we must also say something about efficient management of allocated resources in non-formal education. This is sometimes referred to as cost-effectiveness analysis.

## 6. Cost-Effective Analysis and Non-Formal Education

This analysis starts by defining program objectives as clearly

as possible and calls for some measure of effectiveness or utility

which is related to the objective in question.  This implies a search

for alternative ways of meeting the defined objectives.  This process

is likely to yield a range of possibilities for examination of any

non-formal education program as to costs and gains.  Thus it calls for

documentation of both quantitative and qualitative data.  The information

that needs to be brought together on costs and effectiveness occurs

on three levels:[37]

1. Cost and effectiveness in a given current period for each level of the program.

2. Future cost and effectiveness implications of present programs and alternatives for each level of the program.

3. Changes in cost and effectiveness that accompany changes in level of volume or quality of services provided both current and future periods.

This systematic search for alternatives aims at finding out the

least costly alternative or the alternative giving the highest

effectiveness subject to budget constraints.

Other than the familiar problems of output quantification, the

difficulty with regard to these analyses arises mainly because of the

---

[37]Planning for Educational Development in a Planning, Programming, Budgeting System, Washington, D. C.:  prepared by the George Washington University, 20036, 1968, p. 27.

fact that most of the programs have multiple objectives. It is really difficult to make cost effective analysis in the case of such projects. This is one of the reasons why manpower training programs through non-formal education in the U.S., for instance, have evaluative problems.

All these difficulties are intensified as the time horizon for planning is lengthened. Identifying "preferred alternatives" demands more parameters and more data -- even less readily available than those already discussed. Thus, in order to reduce uncertainty, sensitivity analysis and contingency planning techniques may be adopted for long range planning. Sensitivity analysis seeks to measure the dependency of the value of a variable to alternative values of a particular parameter. Sometimes the sensitivity analysis is carried out prior to the final data collection only to determine the degree of effort to be required for the determination of concerned parameter.

Contingency planning requires additional flexibility and adaptability seeking to provide for various alternative routes when and if various hypothesized events and changes occur.

## 7. Conclusion

In spite of these difficulties cost-benefit analysis is useful as a guide to investment in education for two reasons: (1) it may restrain the abuse of economic arguments in the political process; and (2) it may provide a stimulus to research and scientific understanding

of the problem of investment in education.[38]   If nothing else, it

identifies the pertinent questions.

The "intangibles" plague us; new techniques for making them

tangible or for letting them be meaningfully represented by other

data are required if complete, solid answers are to be found either

to the allocative or efficiency questions.  We can now get solid

responses to perhaps 15 percent of the questions; another, say, 40

percent is subject to "unverified" but solid speculation; the remaining

perhaps 45 percent in areas in which we cannot even speculate sensibly.

The task is to increase the solidity of the speculation in the second

area and to make the third area smaller.

Decisions have to be made – both with respect to the allocation

of resources and their use.  In the absence of objective measures to

assist decision-makers, decisions must be made on the basis of intuition,

patronage, politics, guess, precedent, and so on.  The problems of

attaining increasing objectivity are evidently formidable.

---

[38]S. W. Circiacy-Wantrup, "Benefit-Cost Analysis and Public
Resource Development," Journal of Farm Economics, Vol. 37, No. 4,
(Nov. 1955), pp. 677-689.

SECTION IV

## APPLICATION OF INVESTMENT CRITERIA AND NON-FORMAL EDUCATION

1. Return on Investment: Approaches

2. Conclusion

We h

either in

rent cri

choose

in huma

treate

produc

labor

choic

after

role

marke

pen

inv

vi

We

o

a

We have already indicated that one may acquire job oriented skills either in the schools or on the job. Through the application of investment criteria coupled with wise guessing, the decision-maker has to choose the most efficient line of approach so far as the investment in human capital is concerned. Investment in labor training may be treated as a kind of human capital formation which tends to raise the productivity of the workers and their future earnings. The same type of labor training can occur within the structure of formal schooling. The choice of the training institution is not entirely the worker's, even after he enters the labor market. Both the firms and government play a role depending on whether the economic system based on traditional, market or command.

## 1. Return on Investment

Because of the scarcity of resources, the rate of return from expenditures on non-formal education is critical. In making educational investment decisions, foregone benefits must be taken into account which will give the highest payoff: formal or non-formal educational programs? We have already discussed this issue in the preceding section. However, on the question of return on investment in education, the principal approaches as indicated by Harbison and Myers include the following:

(1) determination of the relationship between expenditures on education and growth in income or in physical capitol formation over a period of time in one country, (2) the residual approach in determining the contribution of education to gross national product (GNP), (3) calculation of the rate of return from expenditures on education and (4) making inter country correlations of school enrollment ratios and GNP.[1]

---

[1]F. Harbison and Myers, Education, Manpower and Economic Growth, McGraw Hill, 1964, p. 5.

Each of these approaches has been explained with particular reference to the U.S. In the following paragraphs, we propose to discuss these approaches, although little is available dealing with the rate of return from expenditures on non-formal education.

As for the first approach, Schultz attempted to establish a relationship between expenditure on education and income or physical capital formation for the period 1900 and 1956. He noted that the national income of the U.S. has exceeded the combined contribution of the three factors on production: land, labor, and stock of reproducible capital. He suggested that this discrepancy can be explained partly by the benefits arising out of economics of scale but largely by the improvement in the quality of labor (e.g., education).

> Examining the investment made in human beings in the United States, Schultz found that the stock of education in the labor force rose 8 1/2 times between 1900 and 1956, while the stock of reproducible capital rose only 4 1/2 times. He concluded that between 36 and 70 percent of the hitherto unexplained rise in the earnings of labor was explained by returns to the additional education of the workers.[2]

A principal difficulty for our purposes is that in such calculations no attempt has been made to show the contribution of formal and non-formal education separately. Parenthetically, factors other than education, particularly public health, contribute significantly to the quality of labor.

> A more recent attempt to measure the costs of all types of education in the United States included estimates for "education in the home" (earnings foregone by mothers staying at home to educate their preschool children), "training on-the-job," "education in the church," "education in the armed services", as well as costs of formal education, special schools, other Federal expenditures, and costs of public libraries. The total

---

[2]O. Popenoe, "Education as Investment," in Development Digest, ed. by P. W. Blair, for USAID, Vol. VI, No. 1, January, 1968.

cost for 1956-1957 was computed at over $60 billion, or 12.9 percent of adjusted gross national product. The comparable figures for 1955-1956 were over $51 billion and 11.8 percent of GNP.[3]

With respect to the second approach, several economists including Solow and Denison[4] attempt to measure the contribution of education by deducting the contribution attributed to measurable inputs of capital and labor. The main problem of this residual approach is that the portion finally attributed to education is hardly specific, to say nothing of its identifying the contribution of non-formal education. But in the absence of a measurement in which one can have confidence through the return to investment in non-formal education, this approach may serve as a useful, if crude, guide to the policy maker.

With regard to the third approach, attempts have been made by several economists including Mincer, Becker, Hector Correa to compute the internal rate of return at which incremental "income obtained later in life would just compensate for the direct expenditure on education and the value of income foregone during the period of schooling"[5] or non-formal education training. If this rate of return is higher than the prevailing interest rate on alternative investments, then the investment in education is a desirable or profitable one. Several different studies[6] indicate that internal rate of return for primary education is

---

[3]Harbison and Myers, op. cit. p. 6.

[4]Ibid. p. 5 to 8.

[5]Popenoe, op. cit. Vol. VI, No. 1, January, 1968.

[6]UNESCO Bulletin, Bangkok, Vol. 1, No. 2, March, 1967, p. 68, For Education in Asia.

is higher

secondary

little inc

There

veloped co

rates of

since you

comes an

attention

becoming

policy is

for count

The

education

LDC's.

most eff

developme

year in

drop out

introduc

the litt

forgone.

Fin

educatio

posite

human re

7

is higher (e.g., 20% or higher in the U.S. compared to 10 to 15% in secondary education) because costs involved are relatively lower and little income is foregone.

There are no known data on this question with respect to less developed countries. We may speculate, however, that the difference in rates of return to primary and secondary education is probably smaller since youngsters enter the labor market earlier and income forgone becomes an element to consider at an earlier age. Careful empirical attention should be given to the private and social returns related to becoming "functionally literate" since this is a critical educational policy issue for less developed countries which is hardly an issue at all for countries such as the U.S.

The differential rate has an interesting implication for non-formal education since many resources are wasted at the primary level in the LDC's. Despite its popularity, the primary education may not be the most efficient form of education for a poor country seeking economic development. For example, out of about 30 million children enrolled each year in grade one of Asian schools, over 50% either repeat the grade or drop out of school and into ultimate illiteracy. This is an expensive introduction to education (estimated at $100 million a year in Asia) for the little it accomplishes, to say nothing of the human potential forever forgone.[7]

Finally, Harbison and Myers make an extensive attempt to correlate educational and economic indices. For 75 countries they develop a composite index to distinguish among countries in terms of four levels of human resource development e.g., level 1: underdeveloped, Level II:

---

[7]Ibid., Vol. I, No. 2, March, 1967, p. 68.

partially developed, Level III:  semi-advanced, Level IV:  advanced.  In

all, 14 different indicators (e.g., GNP per capita, teachers, scientists,

engineers, physician per 1,000 population; first and second level school

enrollment ratio; public expenditure on education as percent of national

income) were tabulated.  Analysis of their data led them to conclude that

economic development correlated more strongly with higher education than

with primary education or literacy.  From this they developed a composite

index of human resource development.  This index consists of the per-

centage of the age group in secondary school plus the percentage in

higher education multiplied by a weight of 5.  The correlation between

this composite index and gross national product per capita in the U.S. is

very high (0.888) but great care must be taken to avoid assigning other-

wise unverified causal relationships on the basis of such a coefficient.[8]

In path breaking studies, however, Mincer and Becker studied rates

of return on investment in on-the-job training which is only a segment

of non-formal education.  Mincer assumes that the rate of return from

on-the-job training is almost equal to that from formal schooling.  The

cases of male/female and white/nonwhite wage differentials are analyzed

through the "investment hypothesis" which suggests that human capital is

a significant factor in explaining wage differentials and employment

patterns.  Becker also considers the matter because it illustrates the

effect of human capital on earnings, employment, and other economic variables.

He argues:  if the present values of net earnings in different occupations

are presumed to be the same as one would expect in a perfect, market

costs and the internal rate of return can be measured from the net earnings

---

[8]In _Development Digest_, Vol. VI, No. 1, January, 1968, p. 1.

information. Becker and Mincer do, however, provide an innovation in

human capital theory by linking to the time profile of investment in

human capital.

In this connection Blaug makes the following comment:

> In using age earning profiles to calculate rates of return on
> investment in schooling, are we not in fact confusing the
> effects of schooling with the effects of training? Indeed
> if all labor training is general training, the age earning
> profiles we observe systematically understate earnings
> attributable to formal education in the early years of
> employment and overstate them in the later years; likewise,
> even if training is specific, there is a general tendency
> to overstate earnings attributable to schooling.[9]

However, using age-earning profiles, Mincer calculated the total amount

invested in on-the-job and off-the-job training in the U.S. in 1939,

1949, and 1958. His calculation is based not on the accounting data

at the enterprise level but on the net return streams by three levels

of education and calculation of corresponding private rates of return

on investment in schooling. "He then applied these rates to each

successive profile to determine what earnings would have been if

individuals had not invested in training. These foregone earnings con-

stitute the costs of general training and hence measure the investments

individuals make in training."[10] The forgone earnings as a result of

general training can be graphically illustrated as follows:

---

[9] M. Blaug, op. cit., p. 195.

[10] Ibid., p. 196.
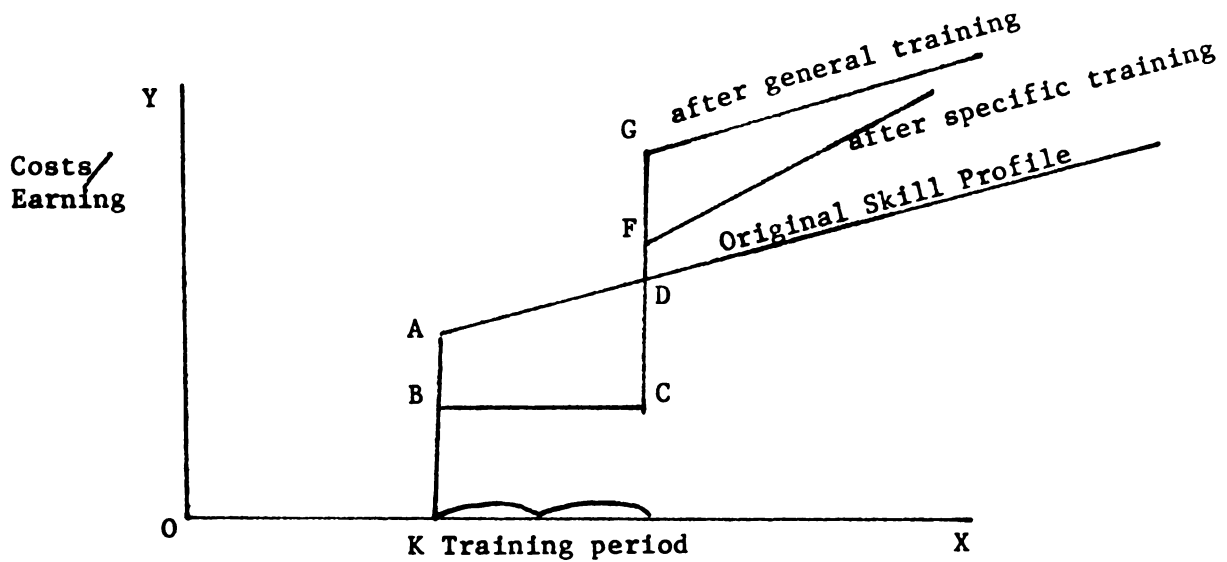
Figure 1. General and specific training.

Here    X axis represents time

Y axis represents cost and earnings

ABCD = income forgone as the result of general training

KBAD indicates that no loss of earning as a result of
     specific training because of original skill pro-
     file line and after specific skill line are the
     same

DF indicates raise in pay after specific training

DG indicates raise in pay after general training

It is assumed that persons who are receiving general training tend to

earn more than the persons who are receiving specific training. But the

way we have drawn the specific and general training line shows uncertainty.

It is conceivable that despite certain advantages, persons with general

training may not compete with persons with specific training in a tech-

nological society such as U.S. because specific training tends to increase

the probability of creativity or innovation in the same or in alternative

line of production.

Mincer, however, is aware of the drawbacks of his analysis and assump-

tions such as that of a constant rate of return to investment. He further

acknowledges his failure to adjust for differences in native ability and home background and to provide reliable evidence on the costs of specific training. However, Blaug makes the following comments on Mincer's studies.

> But more important than any of these is the assumption that rates of return on schooling are not very different from those on training. He does not make an effort to check his results by examining data on the costs and returns of particular training programs in the United States. For example, comparisons of craft apprentices' and operatives' earnings gave an average private rate of return to apprentice training for three industries well below the private rate of return on college education, although social rates of return were not very different in the two cases (Mincer, 1962, pp. 533 to 534). However, from the point of view of Mincer's calculations, it is the private rate of return that is important, since the private rate of return on schooling seems to exceed the rate of training, the implication is that his estimates of the costs of training are actually on the low side. Likewise, it follows that calculations of the rates of return on schooling from observed age earnings profiles are, in fact, biased downwards; if we could truly separate the costs and returns from training, rates of return would rise, a surprising result.[11]

Ben Porath[12] also develops a model which generates some of the qualitative characteristics of the observed life cycle of earnings: zero earnings followed by a period of increasing earnings at diminishing rate with an eventual decline.

The production function is intended to give some of the characteristics of the technology influencing the individual's decision to invest in himself. Production functions describe relationships between outputs of commodities produced by firms and the various combinations of the inputs they employ in the production. Knowledge of these production functions for the individual is equivalent to knowledge of potential demands by industry for skills. Such knowledge should be critical to the

---

[11]Ibid., p. 199.

[12]Yoram Ben-Porath, "The Production of Human Capital and the Life Cycle of Earnings", Journal of Political Economy, Vol. 75, No. 4, August, 1967, pp. 352 to 365.

individual in deciding on the amount and nature of investment in his

own skill development. In this connection, Simmons comments:[13]

> Rate of return models usually estimate lifetime earnings as a
> function of age and schooling, and show a high rate of return
> to all levels of education in a developing country, with pri-
> mary consistently the highest of the three levels. How correctly
> is this model specified? Omitting variables like socioeconomic
> status, quality of schooling, work experience, personality and
> health, to suggest a few, should upwardly bias the coefficients
> of the traditional model. Using survey data from the Tunisian
> shoe industry to estimate earnings regressions, I found that
> work experience was much more significant than either using
> cognitive skills on the job or primary schooling in predicting
> earnings.

From the preceding analysis it is clear that we have not yet explored

fully the costs, benefits, and incidence of the non-formal educational

training. Some attempts have, however, been made to make cost benefit

---

[13]John Simmons, "The Income Benefits from Formal and Informal
Education: Estimates for a Socioeconomic Model", Economic Development
Reports, No. 211, Cambridge, Massachusetts: The Center for International
Affairs, Harvard Univ., April, 1972.

analysis of the government training and retraining programs and schemes

(e.g., Borus,[14] Oatey,[15] Lester[16] Gordon,[17] Weisbrod,[18] Hardin,[19] and

others).

Since education, formal or non-formal, is a complex social product, the measurement of the rate of return is highly complex. Unlike dams or steel mills it is not possible to calculate the rate of financial return on a non-formal education project because of the difficulty of determining how much is really consumption, how much represents investment, and how much is a political good. The goals of modern societies are political, social, cultural and economic. And, the purposes of the non-formal education are likewise complex and may be different in different societies depending on priorities. If we elect to give top priority to economic growth, then the program of human resource

---

[14] E. Michael Borus, "A Benefit Cost Analysis of the Economic Effectiveness of Retraining the Unemployed", Yale Economic Essays, Vol. 4, No. 2, Fall, 1964, pp. 371 to 427.

[15] M. Oatey, "The Economics of Training with Notes on the Industrial Training Act", British Journal of Industrial Relations, March, 1970.

[16] R. A. Lester, Manpower Planning in a Free Society, Princeton University Press, 1966.

[17] M. S. Gordon, Retraining and Labor Market Adjustment in Western Europe, U.S. Government Printing Press, 1965.

[18] B. A. Weisbrod, "Conceptual Issues in Evaluating Training Programs", in Monthly Labor Review, October, 1966.

[19] E. Hardin, "Benefit Cost Analysis of Occupational Training Programs: A Comparison of Recent Studies", Cost Benefit Analysis of Manpower Policies, Proceedings of a North American Conference May 14, 15, 1969, (ed.) G. G. Somer and W. D. Wood, pp. 97 to 118. Published jointly by the Industrial Relations Center, Queen's University, Kingston, Ontario, and the Center for Studies in Vocational and Technical Education, the University of Wisconsin, Madison, Wisconsin, 1969.

development through non-formal education must be designed to provide
the knowledge and critical skill required by the economy. The better
the definition of a program and the greater the degree to which output
is quantifiable, the better is the chance for ascertaining the rate
of return from investment in non-formal education programs. The fact
is that the measurement of rates of return on non-formal educational
investment have both individual and social dimensions. The individual
dimension arises from the fact of net loss or gain of individual earnings
from the acquired skill and knowledge. The social dimension arises
from the external economies or diseconomies from an investment in non-
formal educational programs and from the fact of imperfect markets.

> Through pricing policy and various forms of financial aid,
> society has 'hidden' many of the costs so that the individ-
> ual will be more likely to make a favorable decision about
> continuing his education than he would make in a completely
> free market unsubsidized situation. From society's point
> of view, if there are significant communal benefits re-
> sulting from an educational program it is rational not to
> depend on individual rational full cost decision.[20]

Furthermore, it is a mistake to think of returns from non-formal edu-
cational investment in economic terms only. The efforts to give
greater emphasis to human resources in economic analysis and the
attempts to measure the contribution of education to economic growth
are highly desirable, the notion that non-formal education program
either can or should be analyzed solely in economic terms is unrealistic.
Thus, the return on education in terms of increases in individual or
national income, increases in productivity, cannot be taken as the
only test of the effectiveness of non-formal educational programs.

---

[20]Development Digest, op. cit., p. 59.

Nevertheless, economists do define and measure progress by economic criteria, even if as individual members of the society they have often a much broader view of the goals of a society.[21]

## 4. Conclusion

There is an increasing awareness among economists of the role of non-formal education in human resource development. But only a part of the investment in non-formal education (e.g., on-the-job training) is explored at all, and even there the surface has just been scratched. Investment in in-service training or follow up training where non-formal education can be a complement to formal education has yet to be explored.

Further, there is little empirical information on the rate of return to non-formal education although several attempts have been made to calculate the rate of return from formal schooling in the U.S. Education is a complex social good, it is difficult to measure its rate of return in economic and financial terms as we would a factory or service where the costs tend to be unambiguous and the outcome is measured in unambiguous profits.

---

[21]Harbison and Myers, op. cit., p. 12.

SECTION V

## PLANNING, GROWTH, DEVELOPMENT AND NON-FORMAL EDUCATION

1.  Introduction

2.  Evolution of Non-Formal Educational Planning:
    a.  Objectives
    b.  Survey of Resources
    c.  Matching Resources and Objectives Through Technical
        Co-efficients
    d.  Implementation
    e.  Evaluation

4.  Two Levels, Two Forms and Two Approaches of Non-Formal
    Educational Planning

5.  Growth and Non-Formal Education

6.  Development, Modernization and Non-Formal Education

7.  Strategy in Planning Non-Formal Education:
    a.  Principle of Need
    b.  Principle of Consistency
    c.  Principle of Reciprocity
    d.  Principle of Efficiency and Productivity
    e.  Principle of Universality

8.  Manpower Development in Non-Formal Educational Planning

9.  System Analysis Approach in Non-Formal Education

10. Summary and Conclusions.

## 1. Introduction

Planning is a complex phenomenon. Modern development planning, as practiced in the LDCs since the World War II, has used a model similar to that developed in the U.S.S.R. after World War I.[1]

Despite the great diversity of forms,[2] all planning seems to be concerned in some way or another with "figuring out how you get from here to there; and from where you are to where you want to be." Put it another way, it is an organized conscious attempt to exploit the available resources to achieve specific goals through a rational application of sets of choices among various possible alternatives.

> Planning as a process is an indispensable pre-condition for the formulation of effective development policies and measures. A plan can play an important part in the planning policies and measures. But, if a plan is prepared before the process has begun in earnest or if it is unable to generate the process, it is likely to have little significance for development.[3]

Development planning may include sub-national planning for one region or multi-national regional planning involving a series of regions covering an entire country. Experience shows that it is not only the economic potential but also the political will coupled with administrative capacity that determines whether or not a plan will be a success or a

---

[1]Albert Waterston, _Development Planning: Lessons of Experience_, World Bank, Maryland: The Hopkins Press, 1969, p. 6.

[2]John E. Elliott, "Economic Planning Reconsidered," p. 62, reproduced from Albert Waterston, _op. cit._, p. 9

[3]Albert Waterston, "What Do You Know About Planning," _International Development Review_, Vol. VII, No. 4, December, 1965. _Passim_.

failure.[4] The political will can be quantified in terms of taxes,

credit, and investment. While it is important to know the theory of

planning, the importance of empirical evidence and experience in

planning in other countries should not be overlooked. Rather, a

priority should be given to the lessons from experience of planning.

Colm and others expressed the similar view in preparing a plan.[5]

With this brief introduction of development planning we turn

to the question of evolution of non-formal educational planning.

## 2.   Evolution of Non-Formal Educational Planning

Although we are just developing the non-formal education planning

concept, an early integrated and systematic attempt on a national scale

was made at development planning during the first Five-Year Plan of

the U.S.S.R.  Despite the Soviet success, there was not ready acceptance

of the concept of educational planning in the Western countries and

the non-Communist LDCs.  Gradually, the importance of planning in the

field of social policy was stressed by non-Marxist economists such as

Mannheim and Tugwell.  Thus, several fragmented experiments in

educational planning were made in the form of Tardieu plan of 1929

and the Marguet plan in 1934 in France, and the New Deal planning in

the 1930's in the U. S.  But only after the second World War, the

---

[4]Albert Waterston, op. cit., pp. 6-9.

[5]Gerhard Colm and Theodore Geiger, "Country Programming as a Guide to Development," p. 66, Reproduced from Albert Waterston, Development Planning, op. cit., p. 7.

Western countries and many non-Western LDCs saw social ferment in the form of rising expectations of the masses, coupled with demand for education. The concept of educational planning gained currency in many Western countries such as France where "education became an integral part of the national plan in 1953."[6] In the U.S., where education is a state and local function, the lack of a federal plan does not, of course, imply lack of planning. Education became an important sector of the development plan of many LDCs. Thus, education figures prominently in the development plans of countries such as India in 1951, Burma in 1952, Colombia in 1957, Pakistan and Morocco in 1958, Tunisia in 1959, Bangladesh in 1972, and so on.[7]

The preceding discussion indicates that the educational planning concept is considered to be a part of the broader concept of national economic planning for the purpose of the development of social infrastructure. Central to the concept is the underlying assumption that formulation and implementation of any educational plan require investment just like other sectors of the economy, e.g., agriculture

---

[6]UNESCO, Educational Planning: A World Survey of Problems and Prospect, 1970, p. 28.

[7]The following publications are useful for the purpose of surveys on educational planning: International Bureau of Education/UNESCO, Educational Planning, 1962 (IBE, Publication No. 242). UNESCO, Elements of Educational Planning, 1963, Educational Studies and Documents, 45; UNESCO, UNESCO and Educational Planning, 1965.

and   public health.  But the measurement of return from such investment

presents a serious problem.[8]  We have already discussed the problems

involved in cost and benefit estimation.  A UNESCO report covers many

aspects of educational planning.[9]

However, the interest in non-formal education is of recent origin.

In addition to Michigan State University's involvement in conducting

a program of studies in non-formal education, the World Bank has been

carrying case studies of non-formal education in thirteen LDCs.[10]

Besides, several other U. S. universities such as the University of

California at Los Angeles, and the University of Pittsburgh are also

involved in non-formal education research.  General awareness about

non-formal education is also indicated by the fact several U. S.

universities such as Stanford and Michigan State University are offering

courses and seminars on non-formal education.  USAID has provided

financial aid for many non-formal education programs such as the M.S.U.

project through financial support.

---

[8]C. A. Anderson and Mary J. Bowman, "Theoretical Considerations in Educational Planning," in G.Z.F. Bereday and Joseph A. Lauwery's World Yearbook of Education, 1967; Educational Planning, New York: Harcourt, Brace and World, 1967, p. 15.

[9]UNESCO, Educational Planning:  A World Survey of Problems and Prospects, op. cit.

[10]World Bank, Education Sector Working Paper, September, 1971, p. 20.

## 3. Concept of Non-Formal Educational Planning

The non-formal educational planning is a conscious and deliberate policy package to exploit the available resources in the most efficient way--to achieve certain socio-economic goals or objectives. This definition has five distinct parts:

(a) a clear statement of objectives;

(b) a survey of resources;

(c) matching resources and objectives through technical co-efficients;

(d) implementation of the plan;

(e) evaluation and review.

Since planning for the non-formal education sub-sector should be a continuous process, the process entails the above-mentioned order of succession of interdependent actions like any other sector planning. Elaboration of these interdependent actions may be useful.

(a) A clear statement of objectives: Only through a clear statement of objectives of any non-formal educational program(s), it is possible to reflect the societal need. This "need" has diverse dimensions encompassing social, economic, cultural and aesthetic and other values; and this is likely to require determining the order of priority among various objectives some of which may come in conflict with others.

(b) A survey of resources: A survey of education needs is essential in order to chart a rational course towards its objectives. It is imperative that the non-formal educational program be drawn in the light of present conditions and recent trends. This involves

The assessment of alternatives which require the assessment of not only
human and financial resources, but also of political, sociological and
administrative capacity or constraints. Any planner who does not give
proper weight to the whole range of constraints is likely to meet with
failure in the process of implementation. Many development plans
(education as a part of them) have met with failure, not because of the
lack of financial and economic resources but because of the lack of
political will.[11] Success of a plan for non-formal education requires
the involvement of the leaders of the community or political leaders.
Administrative effectiveness to carry out the program at its implementation
stage is similarly frequently assumed to exist without careful
consideration. Furthering the program requires proper understanding
and acceptance by the people or community concerned. "The greatest
difficulties met by planning are socio-psychological resistance,
inertia, lack of enthusiasm. There is, therefore, a developing feeling
that educational planning cannot be effective if teachers, students,
and the community at large are not always better informed and consulted.
Efficient planning nowadays is an essentially democratic process."[12]

In choosing the best alternative, the overriding concern for
the educational economists is to maximize the benefits from the use of

---

[11]Albert Waterston, "What Do You Know About Planning," op. cit.,
Vol. VII, No. 4, December, 1965.

[12]UNESCO, Educational Planning, op. cit., p. 22.

scarce resources. The fact of scarcity is the heart of economic

problems.

> Educational economists have, in the way of all economists,
> a relatively exact point of view. He endeavors to make the
> best possible use of scanty resources, whether financial or
> human. The outlook of the philosophers, or educationalists--
> if they found their inclinations--is, of course, diametrically
> opposed. They consider, and rightly too, that education,
> intellectual training, moral instruction, are the rights of
> every human being. This belief consequently leads to a non-
> instrumental outlook on the educational process. At the other
> end of the scale, the economist, by the very nature of his
> profession, must cultivate an instrumental outlook.[13]

Evidently there is a need for reconciling these opposing views.

Subject to economic, social and political constraints, a mechanism of

incentives needs to be developed so that educational effort can be

directed towards a desired channel.

(c) Matching of resources and objectives: This is a very

important step in the planning process and is done through co-efficient

of relative effectiveness. This means comparing rates of return or

pay-offs on alternative investments. These are influenced by such

factors as the demand for educational products, costs involved in

providing services, availability of capital, and the level of technology.

Earlier discussion has indicated that it is no easy task to match

resources with objectives. The difficulty arises partly from the

problem of setting up an efficient order of priorities. This arises

because of the complex nature of the educational output.

------

[13]C. F. Beeby (ed.), *op*. *cit*., p. 168.

(d) Implementation of the plan: Without a clear strategy for implementation, a plan is meaningless since in itself no action is produced. Many development plans in which an education plan is a part have not produced the desired result simply because the planners failed to make an "adequate provision for their implementation";[14] it is easy to say much about what is to be achieved, but difficulty arises in the means of attaining the objectives.

(f) Evaluation and review: Since a plan is always future oriented, its course is hardly possible to predict--hence the need for constant review and adjustment and readjustment in the light of change in the social dynamics. In this perspective, non-formal education planning must be a continuous process, with decisions subject to constant review. We have just outlined in its broad detail the various "stages" of the non-formal educational planning in its logical sequence. Since birth, growth, maturity and decay of non-formal education programs can go on simultaneously, all the "stages" of planning are very likely to go together. Any particular program in non-formal education can contribute in the overall sector planning process involving execution of a rational system of choices based on consideration of viable alternative investments compiled with economic and social benefits and costs. If a program in the area of non-formal education does not generate the

---

[14]Albert Waterston, "What Do You Know About Planning," op. cit., Vol. VII, No. 6, December, 1965.

process, it may have relatively little significance for development and change compared to one which is reinforcing the process of change.

## 4. Two Levels, Two Forms, Two Approaches

So far we have discussed the concept of non-formal education planning and the process it entails. Educational economists can conceive of _two_ levels, _two_ forms, and _two_ approaches of non-formal education.

As for levels, we have already indicated that planners can deal with non-formal educational planning either at _macro-level_ which involves the study of the complete, integrated system of non-formal education or a part thereof within the overall framework of development planning, or at _micro-level_ involving an analysis on individual programs or institutions. In this present study we are mainly interested in macro-studies of non-formal educational planning.

As for forms, it may be planning _by direction_ involving the direct intervention by the government when the greater part of the non-formal educational activities are in state hands. It may be planning _by inducement_ involving marginal intervention by the government to correct certain imbalances when the greater part of the economy and, for that matter, a greater part of non-formal educational planning still remains in private hands. Such planning has to be formulated through a process of successive approximation by means of a comparison of resources available and of claims upon these resources. In such cases it may be necessary to adjust the scale and composition of the non-formal education programs to the limited supply of certain specific resources

such as foreign exchange, administrative and technical capabilities.

As for approaches, it may be planning of non-formal education as a sub-sector of overall educational planning, or we may go ahead with planning of non-formal education as an independent sector keeping in view both economic and social goals.

As argued below, I favor planning of the non-formal educational sector in its own right. Treated as a sub-sector of overall economic planning, it becomes merely an extension of manpower planning, thereby losing important control over its potentialities for social change. On the other hand, it might be possible to realize two objectives-- manpower planning in the narrow sense and that of influencing social change.

For the purpose of our analysis we have divided the economic system into three broad areas:

(a) Production program areas (e.g., agriculture, business, etc.)

(b) Physical infrastructure (e.g., water, power, communication, etc.)

(c) Social infrastructure (e.g., health, labor, education, etc.)

Every area of the economic system needs trained and skilled manpower. For example, agriculture needs extension agents, industry and business need stenographers, accountants.

The following models will illustrate these two approaches. We can have a situation as in Model I if we treat planning of non-formal educational sector as a sub-sector which is subservient to other sectors of general economic planning. In this case planning implies a set of decisions for future action to meet the manpower requirement
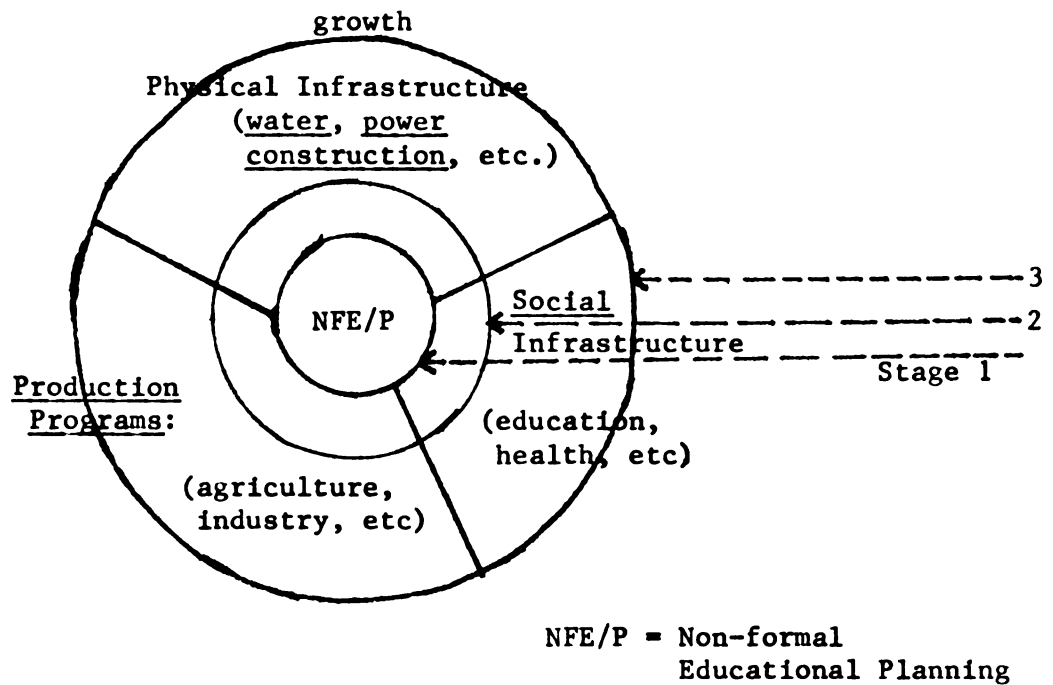
Model I

Figure-1 A:  Non-formal education seen as dependent sector of national planning.
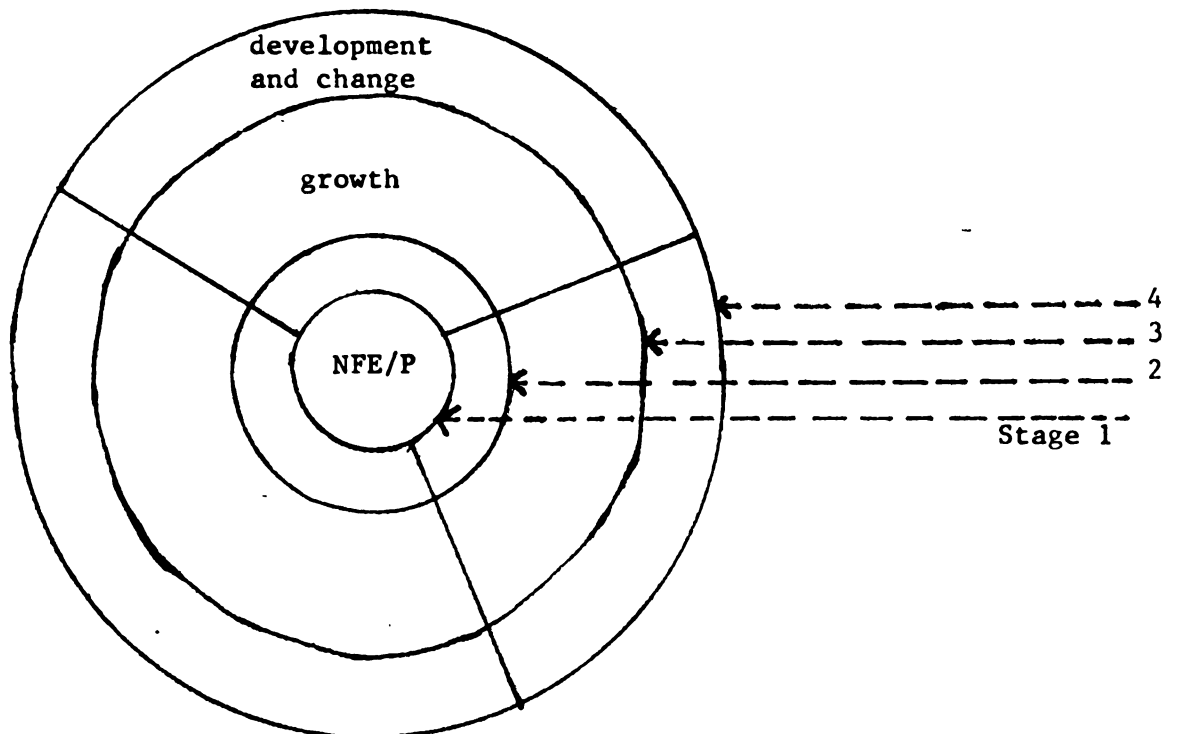


Model II

Figure-1 B:  Non-formal education seen as independent sector of national planning.

of other sectors of stage 2, this planning cannot go beyond stage 3 insofar as its direct influence is concerned; i.e., growth which is the interaction of stage 2. This is because non-formal education programs will be designed only to meet the requirements of other sectors.

But if we make a plan of the non-formal education sector as an independent sector of general planning, then non-formal education activities can influence directly the final stage 4--a stage of social change and development. In such cases, the non-formal education programs can be planned, keeping in view the sectoral and overall goal of the development plan. It is possible to conceive that this type of planning may influence the direction of social change. The Model I and Model II are identical but stage 4 which has made the Model II comprehensive and global in character. In the case of Model I, non-formal education can play a passive and indirect role in influencing social change. But in the case of Model II, the non-formal sector planner can act and re-act more actively in the dynamic setting of growth and development. As such , we are inclined to follow the approach suggested by Model II.

Since we have made a distinction between growth and development, we prefer to discuss some implications of non-formal education with regard to growth and development.

## 5. Growth and Non-Formal Education

Myint has stated that "balanced growth theory may refer to the minimum _size_ of investment programs which are required to start economic

development or it may refer to the _path_ of economic development and

the pattern of investment necessary to keep the different sectors of

the economy in a balanced way with each other."[15] He distinguished

three related versions of theory: the first version emphasized the

consumer's goods industries;[16] the second version the technical

indivisibilities in social overhead services in transport, communication

power, etc. (e.g., physical infrastructure), and the third version

integrated program on industrialization (e.g., the big push).[17] Without

entering into the controversy between the balanced growth and unbalanced

growth approaches as stressed by Professor Hirschman, there seems to be

a consensus among economists, strengthened by experiences in some LDCs

where "education is now increasingly regarded as the 'missing component'

of economic development."[18] Economic literature has not developed well

enough to show as to how to strike a correct balance between investment

in man and investment in machine, between social development and economic

---

[15]Hla Myint, _The Economics of the Developing Countries_, New York, Washington: Praeger, 1965, p. 109.

[16]P. N. Rosenstein-Rodan, "Problems of Industrialization of Eastern and Southern-Eastern Europe," _Economic Journal_, 1943. _Passim_.

[17]P. N. Rosenstein-Rodan, "Notes on the Theory of the Big Push," _Economic Development for Latin America_, (ed.) H. S. Ellis, London: MacMillan, 1951. _Passim_.

[18]H. Myint, _op_. _cit_., p. 101.

development. But to determine the scope of "social infrastructure"
and its direction is not the job of economists alone; it is essentially
the task of social scientists of different disciplines. But there seems
to be little or no disagreement that the growing social and economic
problem of "educated unemployed" in Asian countries is due to too much
of the wrong type of human investment. Even the case for universal
primary education in LDCs is questionable if its high cost and the
problems of absorption are taken into account. Viewed from this
perspective, investment in non-formal education has advantages over
investment in formal education, at least in two ways: First, the
productivity of investment in non-formal education may be greater due
to greater flexibility and adaptability of the social and institutional
framework. The strategy of non-formal education can be evolved
matching the local situations and needs. This approach to educational
investment is likely to stimulate changes and receptiveness to these
changes.

Second, non-formal education is perhaps better suited to fill
up the gaps of "critical skills" in the context of LDCs-

It is "good" to have an extensive system of formal education.
But unfortunately, the resources of the poor countries are too limited
to make massive investments in education ignoring the claims of other
sectors. At least in the early phases of their development programs,
LDCs should concentrate investment on non-formal education and on the
objectives of functional education. "These efforts are less time
consuming, less costly, and more directly related to manpower requirements

than is a formal educational system as such, they are likely to prove

most effective in improving the economic quality of human resources."[19]

At this stage, the special characteristics of investment in

material capital and investment in human capital are explored.  This

intuitive distinction may stimulate arguments which may be useful in

evolving an appropriate investment strategy.  A comparison is shown as

follows:

---

[19]Gerald M. Meier, Leading Issues in Economic Development,
Studies in International Poverty, Oxford University Press, 1970, p. 603.

| | Physical Investment (1) | Investment in Formal Education (2) | Investment in Non-Formal Education (3) |
|---|---|---|---|
| (a) | Easy to distinguish between consumption and investment component | Product carries joint features of consumption and investment | Same as (2) but in general more job oriented, less consumption |
| (b) | Characterized either by a long gestation period (e.g., steel mill) or by a short period (e.g., agriculture) | Generally characterized by a gestation period involving 10 to 20 years | Generally characterized by relatively short period |
| (c) | Relatively easy to apply investment criteria (e.g., cost-benefit analysis) | Difficult to apply. But the standard procedure is that the value of investment in formal education is to estimate the future stream of incremental earnings accruing to the student and to discount it to obtain the present value | Difficult to apply. But the standard procedure as stated in (2) is more applicable; very many projects are of very short term in nature. Identifying appropriate control group is much more difficult |
| (d) | Material capital can usually be scrapped when it becomes too expensive; may have some value | Wrong investment cannot be scrapped; may be self-perpetuating and disrupting the social infrastructure | Same as (2) but the scope for disrupting social infrastructure is less because of the nature of the projects |
| (e) | May or may not be risky | More risky because change in social dynamics over a long period in addition to the risk of death | Relatively less risky if time factor is taken into account |

(f) externalities exist in varying proportions

Externalities exist in varying degrees between rich and poor country: In the _long run perspective_, external benefits of education which lies in the change in the social and cultural climate may constitute a substantial part of the total gain in LDCs or wrong investment may be a source of social instability

External social costs and benefit may constitute a substantial part of total gain usually in the short run

(g) In LDCs, problem of foreign exchange components of costs is a major problem

The same problem tends to increase steadily from kindergarten to university

No set pattern; since most of the programs tend to fit local conditions and re- sources, the problem is less serious compared to the cost problem in formal education

Physical investment is less complex compared to investment in man. But non-formal education presents perhaps less complexity compared to its counterpart in formal education.

## 6. Development, Modernization and Non-Formal Education

We see a very special role of planning for non-formal education in the context of broader concept of development. For our purpose, growth is a part of development. Thus, growth in GNP or per capita income or increase in employment may not be an adequate criterion of development. While advocating a human resource approach to the development of African nations, Harbison, a leading exponent of manpower planning, notes that "education has other broader purposes than human resource development."[20]

We should make a distinction between modernization and development. To me, development is the total cumulative effect of modernization. Modernization is seen here as a process by which social, political and economic institutions of a given society tend to adapt changing functions and role resulting from change in paradigm. As Professor Black[21] observes: "Modernization may be defined as the process by

---

[20]Frederick H. Harbison, "A Human Resource Approach to the Development of African Nations," Washington: American Council on Education, 1971, p. 8.

[21]C. E. Black, The Dynamics of Modernization: A Study in Comparative History, New York: Harper and Row Publishers, 1966, p.7.

which historically evolved institutions are adapted to the rapidly

changing functions that reflect the unprecedented increase in man's

knowledge, permitting control over his environment, that accompanied

the scientific revolution." Though it is difficult to endorse all

change as positive, yet both advanced and LDCs have accepted

modernization in principle as desirable. Education, both formal and

non-formal, can play a crucial role in the process of modernization

even if economic considerations are the most important criteria in

determining the overall degree of modernization in the LDCs.

Investment in non-formal education at a macro-level tends to generate

the forces of change which are likely to influence the life styles

and value systems within a given society. Adam Curle has shown

education as a powerful agent of economic and social change.[22]

Thus, educational investment has to be understood in the broad

social context.

For LDCs, it is high time to understand and fully grasp this

broader conception of development. In industrial Western societies,

job and job only is the "key to individual status and participation

in the good of society", but in the case of new nations which are

still traditional, we can perhaps confer social status in a variety

of ways. This may give meaning and satisfaction to the people

_____

[22]Adam Curle, Educational Strategy for Developing Societies, Second Edition, London: Tavistock Publications, Ltd., 1970, p. xix.

involved. In the light of these social values it is very difficult

to recommend the Western type of development for the new nations without

qualification. Many people are raising fundamental issues.

> Already the wastefulness and resource-hunger of the leading
> industrialized nations are becoming painfully apparent in the
> problems of pollution, energy, water and raw materials.
> Considering that the economic well-being of the industrialized
> nations has steadily depended upon increasing per-capita
> consumption that has reached the point where planned obsolescence
> and fashion changes are essential to maintaining the volume of
> business, can it seriously be maintained that the road to well-
> being for the new nations is along this same route?[23]

Development strategy for the new nations must come in terms of gradual

reduction and ultimate elimination of malnutrition, disease, illiteracy,

squalor, unemployment, and inequalities.

The mere increase in GNP will not reduce poverty automatically,

and serious efforts are required to reduce inequality. "Let us worry

about the _content_ of GNP even more than its rate of increase."[24]

Miller notes the following _four_ educational implications of any broader

conception of development:

1. Education must be less formal;

2. Education must be freed from system restrictions and be
   developed through a variety of specific projects on a
   smaller scale;

---

[23]Ralph M. Miller, "The Planning of Development and its
Educational Implications," in _Perspective on Development_, New York:
The Agricultural Development Council, Inc., October 1972, reprint,
pp. 8-9.

[24]M. Haq, "Employment in the 1970's, a new perspective," New
York: The Agricultural Development Council, Inc., October, 1972,
reprint, pp. 1-5.

3. Educational projects must be recognized as experimental and must be monitored so that we find out what works in specific situations;

4. Education must become more of a service within a complex of development efforts and less of an instructional program for the sake of instruction.[25]

While we are in general agreement with the author with respect to having environmental, experimental and service oriented non-formal educational programs within a new perspective on development, we are hesitant to accept his contention that less formal educational programs or non-formal educational projects, adjusted to local conditions, may not be confined within the requirement of any national or other widespread systems. Miller seems to neglect the importance of "systems analysis approach" in education either consciously or unconsciously. Non-formal education, fragmented though it may be, must be treated as a part of the total social picture. Non-formal education must be approached "as a part of a larger system and not as a system which exists of and for itself". This leads us then to discuss the following aspects of non-formal educational development planning:

(a) Strategy of planning;

(b) Manpower development in non-formal educational planning;

(c) Systems analysis in non-formal education.

---

[25]Ralph M. Miller, op. cit., p. 8.

## 7.  Strategy in Planning Non-Formal Education

Non-formal planning is a continuous process.  Regardless of the state of development in a given country a clear strategy is needed to direct the course of non-formal educational development.  There cannot be one strategy for all countries.  It may differ from country to country depending on the stage of development.  But after making a survey of the literature it seems to us that it might be possible to state a few general principles on the strategy of non-formal education administration:

(a) Principle of need;

(b) Principle of consistency;

(c) Principle of reciprocity;

(d) Principle of efficiency and productivity;

(e) Principle of universality.

In the first instance, the social and economic need of any particular community will have a strong bearing on its strategy. Perhaps because of the serious scarcity of resources, LDCs may place heavy emphasis on job-oriented or service-oriented non-formal education programs.  The essential nature of such programs are not only to match education and work, but also to "help people do things for themselves and to assist them in tackling immediate problems of health, sanitation, etc.  In the broader framework of development this service-oriented non-formal education means a type of instruction which comes in as specific technical problems are identified.  Education then becomes but one auxiliary service for people who are trying to do

something for themselves."[26] This type of emphasis may be needed

equally in the case of a rapidly changing technological society such

as the U. S. and LDCs. But the dimension of the problems may vary

from country to country. In the U. S., for example, training and

retraining through non-formal education might seem extremely helpful

in making necessary job adjustments.[27] Thus we see that emphasis on

non-formal education will depend on "need" of the society.

The second principle is that of consistency. This means not

only the internal harmony between objectives and means in achieving

the objectives but also external consistency. This question of

external harmony arises because education as a sector has a direct

bearing on other sectors of the economy. Thus if a company wants

to retain the older people through non-formal education it must take

timely action not only to house them and to train the required

teachers and to prepare study materials but also ascertain the need

of the different sectors of the economy. In this sense, "strategy

means liaison and harmonization".[28] In formal education, this act

of harmonization is relatively easy compared to non-formal education

where it is difficult to offer a clear statement of objectives

---

[26]Ralph M. Miller, op. cit., p. 10.

[27]OECD, Employment of Older Workers, Paris, 1967, p. 73.

[28]UNESCO, Educational Planning, op. cit., p. 140.

especially when we are involved in macro-planning. At the project or

program level, the objectives of non-formal education are much

clearer and more easily stated and measurable than for formal education.

The heterogeneity of the former and apparent homogeneity of the latter

make quantification and evaluation of non-formal education much more

difficult at the "macro" or consolidated level.

Third, strategy for non-formal education demands the adequate

provision—both financial and human—resources for contingencies arising

out of the implementation of the program.

Fourth, a strategy of educational planning should also be guided

by the objective of efficiency and productivity. The economist's

concern for this principle sometimes creates misunderstanding between

educators and economists, misunderstanding which summed up succinctly:

"Educators believe economists are too materialistic, particularly

when economists talk about the efficiency or productivity of education,

whereas economists believe educators are too romantic, particularly

when educators ask for more money."[29] When both educators and

economists sit together it is not difficult to clarify some of the

main issues and misunderstanding. Perhaps nobody will tolerate clear

wastage of an educational program arising from duplication or

multiplication of efforts, the splitting up of programs into uneconomic

size. The strict application of economists' investment criteria (i.e.,

---

[29]UNESCO, Problems and Strategies of Educational Planning, Lessons from Latin America, R. F. Lyons (ed.), Paris, 1967, p. 103.

cost-benefit analysis) in non-formal educational investment may have

a doubtful validity. There is definitely a scope for cost analysis

(i.e., structure of expenditure, the detailed allocation of funds,

etc.) in non-formal educational planning. But it is because of acute

shortage of technical personnel, particularly in LDCs, we do not suggest

the introduction of program and performance budgeting instead of

conventional item budgets in the area of non-formal education.

Last, but not least, is the principle of universality. This

implies that in addition to economic factors wherever possible

sociological, political and anthropological factors should be taken

into view in planning for non-formal education. From the view point

of development economics, the best strategy means an optimal mix of

several factors in planning for non-formal education as a sector.

This is likely to ensure political support for the program and the

community involvement in such action. This may mean the sacrifice

of the principle of efficiency and productivity to some tolerable

extent.

Coombs' suggestion of two principal elements of a positive

strategy include focus on interrelationship between the educational

system and its environment and stress on educational innovation.[30]

He holds the view that the world educational crisis is born of

_____

[30]P. H. Coombs, The World Educational Crisis, A Systems Analysis, New York: Oxford University Press, 1968, pp. 166-167.

the conjunction of five factors: (a) the student flood, (b) acute resource scarcities, (c) rising costs per student, (d) unsuitability of output, and (e) inertia and inefficiency.

## Manpower-Development in Non-Formal Educational Planning

Within the broader concept of development, non-formal education can contribute in a variety of ways. Manpower development, utilization and maintenance, should be treated as one of the facets of the non-formal educational planning. We have already noted that the scarcity of resources is acute in the case of LDCs, so manpower development through the non-formal education is particularly significant in LDCs. Thus, job-oriented and service-oriented non-formal educational training imply identification of future shortages and surpluses of manpower in each major sector of the economy, and then evolving an appropriate strategy of training and retraining through a system of incentives. Any policy concerning incentives must be treated as an essential component of the strategy of non-formal educational planning. Without provision for incentives or attractiveness of training, it would be difficult to attract the attention of the people involved. This is fundamental to any society based on private enterprise, personal freedom and democratic ideals.

For the purpose of proper identification of actual manpower needs, a planner requires knowledge of the past, and present, and should be able to see how the future will differ with respect to the occupational structure of the total labor force. There is no hard and fast rule with regard to the method of identification of manpower

needs in a given economy. But in the areas of non-formal education

we clearly see five distinct problems of manpower analysis in LDCs.

They are as follows:

(1) statistical data either unavailable or unreliable

(2) lack of trained local personnel

(3) lack of appreciation of the systems analysis approach
in education

(4) unanticipated and non-marginal changes in manpower needs

(5) lack of recognition of non-formal education as a way of
learning

Although the first four problems can also be related to formal

educational planning, the problems are less serious in the case of

formal education because it has been fairly well developed in LDCs

along similar lines to those in the West. Further, the capacity of

the schools, colleges, and universities are known; and objectives

can also be clearly defined. Thus, despite the difficulties,

solving the problem of prospective shortages and surpluses becomes

comparatively easy in the area of formal education. Thus, in advanced

countries, there are several ways one can make manpower forecast for

purposes of ascertaining needs for education.

> These include asking employers to estimate prospective
> requirements; extrapolating past trends in the growth of
> the profession; and correlating the number of employees in
> the occupation with total employment, population, per-capita
> or total national income, or some other such variable, using
> the regression equations thus derived to estimate the total
> stock of engineers needed as of the forecast date. This
> quantity is then compared with a forecast of the supply of
> engineers as of that date, calculated on the basis of the

current stock withdrawals, and inflows from existing educational institutions. Prospective shortages or surpluses are thus identified.[31]

Some of the techniques can be used profitably in forecasting the

manpower requirements from non-formal education.

At this stage this manpower requirement approach in non-formal

education has to be distinguished from social demand approach. Social

deamdn approach is essentially concerned with the concept of education

based on the goal of imparting some measure of education to all its

citizens. In LDCs such as India, Pakistan, Bangladesh, and China,

this approach is gaining popularity simply because of the fact that

the desire for education is constantly increasing. But the problem

arises because the available funds for education are becoming

relatively scarcer day by day in these countries.[32]

Systems Analysis in Non-Formal Education

The term "systems analysis" has recently been widely used. The

method is designed to assist decision makers for long-term perspective

---

[31]H. S. Parnes, "Manpower Analysis in Educational Planning," in Planning Education for Economic and Social Development, (ed.) H. S. Parnes, Paris, OECD, 1964, pp. 73-80.

[32]P. H. Coombs, "The Need For a New Strategy of Educational Development," Comparative Education Review, XIV, February, 1970, pp. 77-78.

planning. The concept has been widely used in defense planning.[33]
It is defined as

> An inquiry to aid a decision maker to choose a course of
> action by systematically investigating his proper objectives,
> comparing quantitatively where possible costs, effectiveness
> and risks associated with the alternative policies or strategies
> for achieving them, and formulating additional alternatives
> if those examined are found wanting. Systems analysis represents
> an approach to, or way of looking at, complex problems of choice
> under uncertainty.[34]

A systems approach in non-formal education is needed not only for

evolving an appropriate strategy, but also for manpower analysis in

non-formal educational planning.

Systems Analysis in education is essentially concerned with

total educational effort in a given society.[35] Non-formal education,

a part of the total system of education, cannot and should not ignore

the role of schools, universities, technical institutes, and the

employing institutions which may provide facilities of training on the

job. The main advantages of the systems approach to education are

as follows:

(1) to get a total picture of demand for education in a

given community, thereby enabling the planner for non-

formal education to know the magnitude of tasks to be

performed by the non-formal education sector.

---

[33]OECD, Budgeting, Programme Analysis, and Cost-Effectiveness
Analysis in Educational Planning, Paris, 1968, p. 33

[34]OECD, Ibid., p. 33.

[35] P. H. Coombs, op. cit., pp. 8-9.

(2) to know the total supply of educational resources--
human and financial.

(3) to identify the total "manpower requirements".

(4) to identify the total "absorptive capacity" referring
to country's capacity to provide some kind of useful
employment for persons with some educational qualifications
--formal or non-formal.

(5) to establish closer linkages among different human resource
development agencies,thereby giving an opportunity for
considering alternatives of training programs (e.g.,whether
pre-employment craft training should be given in a formal
technical school or in an employing establishment on-the-
job).

(6) to avoid duplication and multiplication of educational
efforts so that scarce resources can be used more
effectively and efficiently.

(7) to detect actual and potential distortion in the system,
thereby enabling the planner to consider measures to
rectify the distortion.

This systems analysis approach in non-formal education is highly

complex.  In LDCs this complexity arises partly because of the very

nature of the problem, partly because of acute shortages of skilled

personnel in this area and partly because of the lack of information

and effective communication as well as paucity of statistical data.

Also, when non-formal education becomes "systematic" it tends also to

become somehow formal. Despite this, effort should be made to apply systems analysis in non-formal educational planning, because this approach will not only highlight the various areas of concern but also offer different alternatives. This will facilitate the decision making process and certainly help reduce wastage.[36]

## 10. Summary and Conclusions

1. Despite the great diversity of forms, planning implies a conscious effort to exploit the available resources - both human and financial - to attain certain more or less specific objectives. The degree of specificity frequently leaves much to be desired.

2. The current interest in non-formal education is essentially a phenomenon of the 1970's. Any definition of non-formal educational planning must have the following five distinct parts either implicitly or explicitly:

(a) a statement of objectives and priorities in the light of the "need";

(b) a survey of resources both human and financial;

(c) matching of resources with objectives through technical co-efficients;

(d) implementation of the plan;

(e) a provision for evaluation and feedback.

3. The educational economist can conceive of two levels, two forms, and two approaches to non-formal education. As for levels,

---

[36]F. H. Harbison, "Human Resource Development Planning in Modernizing Economics," _International Labour Review_, Vol. LXXXV, No. 5, May, 1962.

economists can study non-formal education either from a macro-level or from micro-level. As for forms, it may be planning by inducement or by direction. As for approaches, we may treat the non-formal education as sector of overall society or sub-sector within an education sector.

4. Growth and development are distinctive entities. Education is now increasingly regarded as a vital component of economic growth and development. But investment in non-formal education can have advantages over investment in formal education at least in two ways: First: it produces greater flexibility and adaptability within the social and institutional framework. Second: it is better suited to fill up the gaps of "critical skills" needed for development. These efforts are likely to be "less time consuming and less costly".

5. After making a comparative analysis of the characteristics of investment in formal and in non-formal education, it has been found that investment in man through non-formal education is perhaps less complex. The following aspects of non-formal education have been discussed:

(a) strategy of planning;

(b) manpower development in non-formal educational planning;

(c) systems analysis in non-formal education.

As for strategy, we have developed the general five principles of strategy as follows:

1. Principle of need (i.e., establish need or identify the area of concern)

2. Principle of consistency (i.e., internal and external harmony)

3. Principle of reciprocity (i.e., making adequate provision for carrying out activities arising out of implementation of the project)

4. Principle of efficiency and productivity (i.e., avoidance of wastage and better utilization of resources)

5. Principle of universality (i.e., taking into consideration action of sociological, political, and anthropological factors in addition to economic factors wherever possible)

Manpower development, utilization and maintenance is treated as one of the facets of non-formal education. We find five distinct problems of manpower analysis in LDCs in the area of non-formal education. They are as follows:

(1) lack of statistical data;

(2) lack of trained native personnel

(3) lack of appreciation of the system approach in education;

(4) uncertainty in ascertaining the manpower need;

(5) lack of recognition of non-formal education as a mode of learning

Lastly, we have seen that systems analysis approach in education is concerned with the total educational effort in a given society. Non-formal education is seen as a vital part of the total system of education. As such, activity in the area of non-formal education must take into account the activities which are going on in formal schools, with a view to get the advantages as follows:

1. to get a total picture of demand for education;

2. to get a total picture of supply of educational resources – human and financial;

3. to identify the total manpower requirements;

4. to establish closer linkages;

5. to avoid duplication;

6. to detect actual and potential distortion in the system.

Taken all in all, we see that non-formal education if properly planned, can play a decisive role in human resource development not only in advanced countries, but also in modernizing economies such as India, Bangladesh, Nigeria, and Brazil. Development experience has shown that most of the plans in LDCs have failed due to inadequate implementation. This is a very important lesson for those concerned with planning non-formal education sector. Non-formal educational planning is in its infancy; but we see its great prospects and possibilities in the 1970's.

SECTION VI

SUMMARY AND CONCLUSIONS

<u>Trends and Issues in the Economics of Non-Formal Education</u> is

simultaneously discrete and continuous. It is "discrete" in the sense

that it comprises distinct sections, each of which is intended to be

independent of the others with its own objectives and related analysis.

It is "continuous" in the sense that all sections together present

the reader with an integrated view of the economic aspects of non-formal

education.

This is a descriptive analysis in which I have adopted

essentially a theoretical and policy approach. The data and sources

used are secondary. The underlying hypothesis is to be examined that

non-formal education can substitute for and/or complement formal

education both in more and less developed countries. Section II

demonstrates that non-formal education can be an acceptable alternative

to formal education. A theoretical framework is developed indicating

the problems involved in investment criteria and their application to

non-formal education. Finally, the need for strategy of planning

the non-formal education sector is discussed.

### An Integrated Summary

Non-formal education is here defined as a "conscious" effort to

utilize the educational resources (human and financial) usually outside

of formal schools to add to the total learning opportunities available

in both "consumption" and "capital forming" activities in a given

community. The main feature of non-formal education is that learning

and work experience are closely related so that motivation is maximized

because of the evident link between learning and reward. This is

distinguished from learning associated with formal schools. This is also distinguished from pre-school, family learning situations which may be called "informal" education along with learning associated incidentally with exposure to the physical and social environment.

One group of educators views education as a life long, continuous process, and it follows that non-formal and formal education must co-exist. Another school advocates "de-Schooling society" or the abolition of formal education. Schools are said to create social discrimination and inequality, and to require conformity. Economists can view non-formal education either at the macro-level involving the study of the integrated system of non-formal education or at micro-level involving an analysis of individual programs.

Section II demonstrates that non-formal education can be an effective alternative to formal education. A number of relationships is considered such as those between education and employment, between demand for and supply of skills both at micro and macro-level. This demonstrates many functions for non-formal education particularly in filling many lacunae which I have chosen to call "gaps." Cross-elasticity of demand is considered which measures the price-quantity relationships between two products, e.g., the relationship of a relative change in the quantity of non-formal education taken to a relative change in the price of formal education. The demand and price relationship between formal and non-formal educational output are explained. The role of non-formal education is considered with respect to nine "gaps" and its capacity to reduce them:

1. the job gap between education and work experience resulting in maximizing motivation. (i.e., job gap).

2. the wastage of resources resulting from dropouts by providing alternative institutions of learning (i.e., efficiency gap).

3. the pressure on formal schools thereby helping to improve the quality of education (i.e., demand and supply gap).

4. the pressure on schools so that they can cope with the tremendous growth of school age population (i.e., population gap).

5. the rate of rural imigration to cities (i.e., wage gap).

6. the social inequality and discrimination in education (i.e., equity gap).

7. the rigidity and bureaucratic arrangement of the schools. The diverse nature of non-formal education programs tends to be more adaptable to educational innovation and change (i.e., adaptability gap).

8. the supervisor's difficulty in assessing individual performance on the job since the worker's skills are likely to outrun supervisor's (i.e., evaluation gap).

9. the expectation gap which is reflected partly in migration from rural to urban areas, and the pursuit of education for jobs which are not readily available (i.e., expectation gap)

Thus the non-formal education sector, if properly planned can offer more than an alternative. By its diversity, non-formal education

can be a dynamic factor in manpower development, utilization, and maintenance. The economic and social theory of non-formal education developed here is a first step to explain the dynamism of non-formal education in the hope that others may be stimulated to further investigation.

Like the output of formal education, the output of non-formal education is also a complex social product. In both, there exists the difficulty of separating investment from consumption expenditure. But unlike formal schooling, non-formal education does not generally involve a long gestation period since it produces an output which is usually task specific. This makes the analysis a little easier. But the problem of application of investment criteria to education is formidable. The intangibles plague us. But decisions have to be made – both with respect to the allocation of resources and their efficient management. Despite the difficulties, cost-benefit analysis and cost-effective analysis are useful in the sense that they bring an element of objectivity. Costs are relatively simple to handle, but the benefit estimation presents a problem of serious nature.

There is, however, an increasing awareness among economists of the role of non-formal education in human resource development which is defined as the process of increasing knowledge and the "critical skills" of all the people in a society for social and economic development. But a part of the non-formal education, especially "on-the-job" training, is explored in some detail. Machlup identified

three types of on-the-job training (a) on-the-job training from

experience, (b) on-the-job training under guidance, and (c) off-the-job

training inside the factory. His concept seems to be too narrow

because he excludes (a) from the on-the-job training. Despite certain

limitations, Becker's discussion of on-the-job training (i.e., general

training useful to firms besides those providing for it and specific

training intended for the firms providing for it) is very powerful;

it may prove to be a critical breakthrough in the development of a

useful theory of on-the-job training.

There is additional discussion of rates of return to non-formal

education. Little empirical work has been done on this, although

several attempts have been made to calculate the rate of return from

formal schooling in the U. S. Both Becker and Mincer study rates

of return on investment in on-the-job training and provide an

innovation in human capital theory by seeking to treat the "useful

life" of the investment, as fixed physical assets are treated.

There are many imperfections in the procedure such as Mincer's

assumption of constant rate of return to investment and, further,

his failure to adjust for differences in native ability and home

backgrounds in his calculation of comparative rates of return.

The appreciation or application of investment criteria, however

difficult aids in the efficient allocation and management of scarce

resources. The final section deals with planning. It is linked with

the preceding discussion because appropriate investment criteria are

extremely important for planners. The planning of the non-formal

education sector, a continuous process, is a deliberate attempt to
utilize the available resources usually outside of the formal school
system in order to achieve certain specific well-defined objectives,
to include finally a means of evaluation. For planning purposes,
non-formal education is seen as a vital part of the total system
of education so that a linkage is established and waste avoided. In
other words, planners should adopt the "systems analysis approach"
in educational planning.

But sector planning also calls for a strategy of planning
which should at least be guided by the following five principles:

1. Principle of need (i.e., establish need or identify the
   areas of concern)

2. Principle of consistency (i.e., maintaining a balance
   between internal and external harmony)

3. Principle of reciprocity (i.e., making adequate provision
   for carrying out activities arising out of implementation
   of the project)

4. Principle of efficiency and productivity (i.e., avoidance
   of waste and efficient utilization of resources)

5. Principle of universality (i.e., taking into consideration
   of sociological, political, and anthropological factors in
   addition to economic factors wherever possible)

## Major Conclusions and Findings

1.  Both economists and educators can view non-formal education at either the macro-level or the micro-level.

2.  The appeal of the non-formal education is understandably great both in more and less developed countries. This appeal has solid theoretical bases, and the analysis contributes to developing an economic and social theory of non-formal education.

3.  The substitutibilities and the complementarities between non-formal and formal education can be explained with the help of cross-elasticity of demand. That is, when non-formal education becomes a close substitute to formal education so far as the saleable skill in the job market is concerned, the demand for non-formal education is likely to go up with the increase in the price of formal education. Suppose auto mechanics can be trained either in a formal school or in the neighborhood garage, and they are close substitutes for each other. With the increase in the wages of formal school mechanics, ceterus paribus, fewer will be employed. Then the demand for non-formal education mechanic tends to increase. This increase in demand for non-formal education mechanics will lead to higher wages. In other words, wages to both formal and non-formal education outputs will move in the same direction if they are substitutes. The reverse is the case if they are complementary to each other.

If the non-formal education programs become the complementary source of supply of skill in the job market, the demand for non-formal education will increase with the increase in the demand for complementary formal education.

4.  If the factory turns into a classroom (instead of the class-room into a factory), a better labor and management relationship may emerge. The laborers will be benefitted by the greater opportunities to acquire skills necessary for promotion or higher salary. Management will be benefitted by getting more committed labor. This may lead to a lower labor turnover.

5.  There are conceptual problems involved in cost and benefit estimation. There seems to be little consensus among economists on certain basic issues such as appropriateness of the interest rate to discount long-term public investment, the length of the observation period, the appropriateness of control group, and definition of social costs and benefits (i.e., externalities). The problem is further complicated by the fact that non-formal education output is a complex social product. Cost-benefit analysis, however, provides an element of objectivity in the decision-making process.

6.  In the case formal schooling, earning and learning do not usually go together, and the income stream is negative during the years of schooling as a result of foregone income, and

tends to be positive during the periods of earning. In
the case of non-formal education, learning and earning may
generally go together. In some cases, learning becomes
unavoidable involving no marginal costs. Even in the case
of off-the-job training or on-the-job training (general
and specific), earning and learning can conceivably go
together, and the income stream may be positive. This is
a significant difference.

7.  The differences between the general and specific training
    on the job are already explained. The firms may be
    eoncouraged to draw up a general training through fiscal
    and monetary incentives, as the expenditure on such
    training (whether or not they are actually borne by the
    labor force) generates economies external to the firm.

8.  Unlike a dam or steel mill, it is hardly possible to
    calculate the rate of financial return on a non-formal
    educational project because of the difficulty of separating
    social, cultural, political and economic aspects of the
    non-formal educational product. But if the objectives of
    a program are defined, (if possible, in behaviorial terms)
    and priorities determined at least the first requisite for
    computing the rate of return from investment in non-formal
    education has been met.

9.  A plan of the non-formal education sector may be evolved
    by a relatively small group of well trained and experienced

scholars, but its implementation may require the active involvement of the whole public and private sector as well as other social and economic institutions. Implementation must be seen as an integral part of the planning process.

10. The investment in man through non-formal education presents less complexity compared to its counterpart in formal education in that its objectives are more specific and narrower, thus increasing the likelihood of meaningful evaluation and measurement.

BIBLIOGRAPHY

# BIBLIOGRAPHY

## Section I

1.  Ferguson, C. E., Micro-Economic Theory, Irwin, Illinois, 1969.

2.  Illich, E., De-Schooling Society, New York:  Harper and Row, 1970

3.  Levine, D. U. and R. J. Havighurst (eds.), Farewell to School???
    Worthington, Ohio:  C. A. Jones Publishing Company, 1971.

4.  Peterson, W. C., Income Employment and Economic Growth, New
    York: W. W. Norton and Company, Inc., 1962.

5.  Reimer, R. E., School is Dead, Garden City, New York:  Doubleday
    and Company, 1971.

## Section II

1.  Beeby, C. E. (ed.), Qualitative Aspects of Educational Planning,
    Paris:  UNESCO, 1969.

2.  Bowman, Mary J., "Perspectives on Education and Development,"
    in Human Capital Formation and Manpower Development, ed. by
    R. A. Wykstra, New York:  The Free Press, 1971.

3.  Braff, Allan J., Micro-Economic Analysis, New York:  John Wiley
    and Sons, Inc., 1969, Chapter 9.

4.  Coombs, P. H., The World Educational Crisis:  A System Analysis,
    New York, Oxford, 1968.

5.  Hansen, Lee W. (ed.), Education, Income and Human Capital,
    Studies in Income and Wealth, No. 35, New York:  National
    Bureau of Economic Research, 1970.

6.  Harbison, F. H., "Human Resources and Non-formal Education,"
    in New Strategies for Educational Development, ed. by Cole
    S. Brembeck and Timothy Thompson, Lexington, Mass.:  D. C.
    Heath, 1973.

7.    Illich, Ivan, <u>Deschooling Society</u>, New York:  Harper and Row, 1970.

8.    Lewis, Arthur W., <u>Development Planning</u>, New York:  Harper and Row, 1966.

9.    Meier, Gerald M. (ed.), <u>Leading Issues in Economic Development</u>, New York:  Oxford University Press, 1970.

10.   Myint, Hla, <u>The Economics of the Developing Countries</u>, New York, Washington:  Praeger Publishers, 1969, Chapter 5.

11.   Reimer, E., <u>School Is Dead</u>, Garden City, New York:  Doubleday and Company, 1971.

12.   UNESCO, <u>Economic and Social Aspects of Educational Planning</u>, Paris:  UNESCO, 1964.

13.   USAID, <u>Manpower and Employment Planning in Lower Income Countries</u>, Washington, D. C.:  Office of Labor, February, 1971.

14.   Schneider, E., <u>Pricing and Equilibrium</u>, London:  Allen and Unwin Ltd., 1962.

<div align="center">Section III</div>

A.    <u>Theory and Application of Cost-Benefit Analysis</u>

1.    Alchian, Armen A., "Cost-Effectiveness of Cost-Effectiveness," in <u>Defense Management</u>, edited by Stephen Enke, pp. 74-86. Englewood Cliffs:  Prentice-Hall, 1967.

2.    Arrow, Kenneth J., "Criteria for Social Investment," <u>Water Resources Research</u>, Vol. 1, No. 1 (1965), pp. 1-8.

3.    Breckner, Norman V., and Joseph W. Noah, "Costing of Systems," in <u>Defense Management</u>, edited by Stephen Enke, pp. 42-59. Englewood Cliffs:  Prentice-Hall, 1967.

4.    Brookings Institution.  <u>Applying Benefit-Cost Analysis to Public</u> Programs.  Brookings Research Report No. 79, Washington, 1968, p. 8.

5.    Criacy-Wantrup, S. V., "Benefit-Cost Analysis and Public Resource Development," <u>Journal of Farm Economics</u>, Vol. 37, No. 4, (Nov. 1955), pp. 677-689.

6.  Grosse, Robert N., _An Introduction to Cost-Effectiveness Analysis_, McLean:  Research Analysis Corporation, July, 1965, v+ 27 P.

7.  Hammond, Richard J., "Convention and Limitation in Benefit-Cost Analysis," _Natural Resources Journal_, Vol. 6, No. 2 (April, 1966), pp. 195-222.

8.  Helmer, Olaf, _The Application of Cost-Effectiveness to Non-Military Government Problems_, Santa Monica:  The Rand Corporation, September 1966, p. 21.

9.  Hines, Lawrence G., "The Hazards of Benefit-Cost Analysis as a Guide to Public Investment Policy," _Public Finance_, Vol. 17 (1962).

10.  Krutilla, John V., "Welfare Aspects of Benefit-Cost Analysis," _Journal of Political Economy_, Vol. 69, No. 3 (June, 1961), pp. 226-235.

11.  Musgrave, Richard A., "Cost-Benefit Analysis and the Theory of Public Finance," _Journal of Economic Literature_, Vol. 7, No. 3 (September, 1969), pp. 797-806.

12  Prest, A. R. and R. Turvey, "Cost-Benefit Analysis:  A Survey," _Economic Journal_, Vol. 75, No. 300 (December, 1965), pp. 683-735.

13.  Sewell, W. R. D., J. Davis, A. D. Scott, and D. W. Ross, "Guide to Benefit-Cost Analysis," a paper prepared for the Resources for Tomorrow Conference, Montreal, October 23-28, 1961, 49 P.


B.    Problems in Measuring Cost - Benefit Analysis

1.  Brookings Institutions.  _Can Benefits and Costs of Public Investments Be Measured?_, Brookings Research Report, No. 32. Washington, 1965.

2.  Coase, R. H., "The Problem of Social Cost," _Journal of Law and Economics_, Vol. 3 (October, 1960), pp. 1-44.

3.  Hansen, W. Lee, and Burton A. Weisbrod, "The Distribution of Costs and Direct Benefits of Public Higher Education:  The Case of California," _Journal of Human Resources_, Vol. 4, No. 2 (Spring, 1969), pp. 176-191.

4.  Haveman, Robert H., "Benefit-Cost Analysis:  Its Relevance to Public Investment Decisions:  Comment," _Quarterly Journal of Economics_, Vol. 81, No. 4 (November, 1967), pp. 695-702.

166

5.  Judy, Richard W., "Costs: Theoretical and Methodological Issues," in <u>Cost-Benefit Analysis of Manpower Policies, Proceedings of a North American Conference</u>, May 14-15, 1969, edited by G. G. Somers and W. D. Wood, pp. 16-19. Published jointly by the Industrial Relations Centre, Queens University, Kingston, Ontario, and the Center for Studies in Vocational and Technical Education, the University of Wisconsin, Madison, Wisconsin, 1969.

6.  Maass, Arthur, "Benefit-Cost Analysis: Its Relevance to Public Investment Decision," <u>Quarterly Journal of Economics</u>, Vol. 80, No. 2 (May, 1966), pp. 208-226.

7.  Raynauld, Andre, "Benefits and Costs: Theoretical and Methodological Issues: Discussion," in <u>Cost-Benefit Analysis of Manpower Policies, Proceedings of a North American Conference</u>, May 14-15, 1969, edited by G. G. Somers and W. D. Wood, pp. 37-41. Published jointly by the Industrial Relations Centre, Queens University, Kingston, Ontario, and the Center for Studies in Vocational and Technical Education, the University of Wisconsin, Madison, Wisconsin, 1969.

8.  Weisbrod, Burton A., "Benefits of Manpower Programs: Theoretical and Methodological Issues," in <u>Cost-Benefit Analysis of Manpower Policies, Proceedings of a North American Conference</u>, May 14-15, 1969, edited by G. G. Somers and W. D. Wood, pp. 3-15, published jointly by the Industrial Relations Centre, Queens University, Kingston, Ontario and the Center for Studies in Vocational and Technical Education, the University of Wisconsin, Madison, Wisconsin, 1969.


C.  <u>Application of Cost-Benefit Analysis to Schooling</u>:

1.  Ashenfelter, Orley, and Joseph D. Mooney, "Graduate Education, Ability, and Earnings." <u>Review of Economics and Statistics</u>, Vol. 50, No. 1 (February, 1968), pp. 78-86.

2.  Becker, Gary S., "Underinvestment in College Education." <u>American Economic Review</u>, Papers and Proceedings, Vol. 50, No. 2 (May, 1960), pp. 346-354.

3.  Blaug, M., "An Economic Interpretation of the Private Demand for Education." <u>Economica</u>, Vol. 33, No. 130 (May, 1966), pp. 166-182.

4.  Bowman, Mary Jean, "Social Returns to Education," <u>International Social Science Journal</u>, Vol. 14, No. 4 (1962), pp. 647-659.

5.  Carnoy, Martin, "Rates of Return to Schooling in Latin America," *Journal of Human Resources*, Vol. 2, No. 3 (Summer, 1967), pp. 359-374.

6.  Dodge, David A., *Returns to Investment in University Training: the Case of Canadian Accountants, Engineers, and Scientists*. Kingston, Ontario: Industrial Relations Centre, Queens University, forthcoming.

7.  Gisser, Micha, "On Benefit-Cost Analysis of Investment in Schooling in Rural Farm Areas." *American Journal of Agricultural Economics*, Vol. 50, No. 3 (August, 1968), pp. 621-629.

8.  Gouden, A. M. Nalla, "Investment in Education in India," *Journal of Human Resources*, Vol. 2, No. 3 (Summer, 1967), pp. 347-358.

9.  Hirsch, Werner Z., and Morton J. Marcus, "Some Benefit-Cost Considerations of Universal and Junior College Education," *National Tax Journal*, Vol. 19, No. 1 (March, 1966), pp. 48-57. (Reprinted by the Institute of Government and Public Affairs, University of California, Los Angeles, 1966).

10. Merrett, Stephen, "The Rate of Return to Education: A Critique." *Oxford Economic Papers*, Vol. 18, No. 3 (November, 1966), pp. 289-303.

11. Renshaw, Edward F., "Estimating the Returns to Education," *Review of Economics and Statistics*, Vol. 42, No. 3 (August, 1960), pp. 318-303.

12. Schultz, Theodore W., "Capital Formation by Education," *Journal of Political Economy*, Vol. 68, No. 6 (December, 1960), pp. 571-583.

13. Schultz, Theodore W., *The Economic Value of Education*. New York: Columbia University Press, 1963, zii + 92 p.

14. Schultz, Theodore W., "The Rate of Return in Allocating Investment Resources to Education," *Journal of Human Resources*, Vol. 2, No. 3 (Summer, 1967), pp. 293-309.

15. Weisbrod, Burton A., "Education and Investment in Human Capital," *Journal of Political Economy*, Vol. 70, No. 5, Part 2 (October, 1962 Supplement), pp. 106-123.

16.  Wiseman, Jack, "Cost-Benefit Analysis in Education," <u>Southern Economic Journal</u>, Vol. 32, No. 1, Part 2 (July, 1965, Supplement), p. 1-14.


## Section IV

1.  Becker, Gary, "Human Capital," New York:  National Bureau of Economic Research, Chapter 11, 1964.

2.  Becker, Gary, "Investment in Human Capital:  A Theoretical Analysis," and Mincer, Jacob, "On-the-job Training:  Costs Returns and Some Implications," both in <u>Journal of Political Economy</u>, LXX (Supplement, August, 1962).

3.  Harbison, F. and Myers, C. A., <u>Education, Manpower and Economic Growth</u>, McGraw Hill, 1964.

4.  National Bureau of Economic Research (NBER), Human Resources, Fiftieth Anniversary Colloquium VI, New York and London: Columbia University Press, 1972.

5.  Schultz, T. W., <u>Investment in Human Capital</u>, New York:  The Free Press, 1971.

6.  Wykstra, R. A., (ed.), <u>Education and the Economics of Human Capital</u>, New York:  The Free Press, 1971.


## Section V

1.  Coombs, P. H., <u>The World Educational Crisis:  A System Analysis</u>, New York:  Oxford University Press, 1968.

2.  Coombs, P. H., "The Need For a New Strategy of Educational Development," <u>Comparative Education Review</u>, XIV, February, 1970.

3.  Curle, Adam, <u>Educational Strategy for Developing Societies</u>, 2nd Edition, London:  Tabistock Publications, Ltd., 1970, p. xix.

4.  Harbison, F. H., <u>A Human Resource Approach to the Development of African Nations</u>, Washington:  American Council on Education, 1971.

5.  Harbison, F. H., "Human Resource Development in Modernizing Economies," <u>International Labour Review</u>, Vol. LXXXV, No. 5, May, 1962.

6.  Meier, Gerald M., (ed.), <u>Leading Issues in Economic Development</u>:
    <u>Studies in International Poverty</u>, Oxford University Press,
    1970.

7.  Myint, Hla, <u>The Economies of the Developing Countries</u>, New York
    and Washington:  Praeger, 1965.

8.  OECD, <u>Budgeting, Programme Analysis and Cost-Effectiveness
    Analysis in Educational Planning</u>, Paris:  OECD, 1968.

9.  OECD, <u>Promoting the Placement of Older Workers</u>, Paris:  OECD,
    1967.

10. Parnes, H. S., (ed.) "Manpower Analysis in Educational Planning,"
    in <u>Planning Education for Economic and Social Development</u>,
    Paris:  OECD, 1964.

11. UNESCO, <u>Educational Planning:  A World Survey of Problems and
    Prospects</u>, Paris:  UNESCO, 1970.

12. UNESCO, <u>Problems and Strategies of Educational Planning:  Lessons
    from Latin America</u>, Paris:  (ed.) R. F. Lyons, 1967.

13. Waterson, Albert, <u>Development Planning:  Lessons of Experience</u>,
    World Bank, Maryland:  The Hopkins Press, 1969.

14. Waterson, Albert, "What Do You Know About Planning?" <u>International
    Development Review</u>, Vol. VII, No. 4, December, 1965.