

Code No. 8233 (PGD)
Unit 1-9



Allama Iqbal Open University Islamabad

PROCESSES OF EDUCATIONAL PLANNING-I

Code No. 8233 (PGD)



Allama Iqbal Open University Islamabad

COURSE TEAM
“Processes of Educational Planning”
(M.A. EPM 6559)

Chairman: Dr. Hamid Khan Niazi

Course Development Coordinator: Mrs. Rashid Parvez
Assistant Professor

Editor: Dr. Syed Manzoor Hussain Shah
Ms. Tahira Bibi Naushahi

Contributors and Reviewers:

1. Dr. Shaukat Ali Saddiqui
2. Dr. Zulkaif Ahmed
3. Mrs. Aisha Akbar
4. Mrs. Rashida Parvez
5. Mr. Hamid Khan Niazi
6. Mr. Ilyas Qadeer Tahir
7. Dr. S.M. Aijaz
8. Mr. Z.D. Farooqui
9. Dr. Syed Manzoor Hussain Shah
10. Ms. Tahira Bibi Naushahi

Course Coordinator: Ms. Tahira Bibi Naushahi

CONTENTS OF THE COURSE

Unit–1	Introduction to the process of education.....	1
Unit–2	Educational Planning Processes in Pakistan	19
Unit–3	Educational planning processes: objectives and constraints .	39
Unit–4	Policy Formulation, assessment of future needs and setting Targets	57
Unit–5	Establishing Priorities in the Process of Planning	85
Unit–6	Planning the location of schools	113
Unit–7	Statistics as a Tool for Educational Planning	135
Unit–8	Mathematical Models and Data Requirement for Educational Planning	153
Unit–9	Planning Process: A Theoretical Perspective	181

PREFACE

EPM-6559 entitled as "processes of educational planning - I " is one of the core course of M.A degree programme in educational Planning and Management, offered by EPPSL department faculty of education AIOU Islamabad.

The purpose of this course is introduction the students to the latest tools and techniques used in the process of educational planning and to enable them to develop feasible plans within the available resources and under various constraints. The material includes the following topics:

Why planning? How to initiate and develop planning? What is the process of planning? How to formulate the policies set the targets and establish priorities among different projects? What are different theoretical perspectives of educational planning? Mathematical models and their uses in planning.

This course was initially designed with the collaboration of UNESCO Regional Office Bangkok, which was continuously reorganized, reviewed and ad updated in order to suit the Pakistani situation for prospect educational planners in Pakistan who want to acquire more knowledge and skills for advancement in their profession.

The EPPSL Department of AIOU is extremely thankful to the consultants, Mr. Z.D. Farooqui (Ex- Chief) and Dr. S.M.Ijaz (Ex-Deputy Chief) Planning Commission for providing valuable guidance in reviewers of the course. It is due to their collaborative efforts that we have been able to present this course in the existing form. We will welcome all suggestions for the improvement of the course.

Dr. Hamid Khan Niazi

Chairman EPPSL

COURSE OBJECTIVES

Following are the objectives of the course. After studying the course, the students should be able to:-

1. Understand the process of planning in various stages and organizational machinery for planning in Pakistan;
2. Determine the role which an educational planner has to play in relation to preparing or drafting policy;
3. Understand how different tools and techniques contribute to determine the priorities between educational programmes and projects.
4. Identify all the factors; pedagogical economics, geographical, social, administrative, political etc., which must be taken into account in designing a methodology.
5. Explain different indications of the statistics would be needed to perform an educational planning function.
6. Understand various mathematical models and types of data requirement for Educational planning.
7. Analyse different components of strategic planning and strategic management.

Unit-1

INTRODUCTION TO THE PROCESS OF EDUCATIONAL PLANNING

Written by:

Mrs. Rashida Pervez

Revised by:

Dr. Zulkaif Ahmed

Dr. Syed Manzoor Hussain Shah

CONTENTS

S. No	Description	Page No.
	Introduction.....	3
	Objectives.....	3
1.	Objectives of the Plan.....	4
2.	Planning for Planning.....	5
3.	Education Ministry-The Planning Organization.....	5
4.	Re-organization and Modernization of Administration	6
5.	Data Gathering and Processing.....	7
6.	Planning Begins	8
7.	Formulation of Plan.....	11
8.	Plan Implementation	13
9.	Planning Process in Pakistan	14
10.	Pitfalls of Planning	14
11.	Conclusion	16
12.	Recommended Reading	17
13.	Self-assessment Questions	18

INTRODUCTION

Educational planning is not a new activity. It is as old as education system itself because any attempt to design or develop an education system in national manner involves planning. But while educational planning as an activity is old, it is relatively new as a specialized profession and discipline. In some countries the establishment planning units is even more recent, and its objectives, strategies and approaches are still being discussed inclusively. Why there has been the sudden surge of interest in educational planning? One can identify a number of reasons.

First, has been the growth of overall development planning, not only in the socialist world but also even in capitalist countries. To a greater or lesser degree all governments are engaged in development planning. Within such a framework education has a central role as a supplier of trained manpower to all sectors of the economy, as a major claimant on public revenues, and as a vital component itself in the higher living standard that countries are trying to promote.

Second, the quickening interest by economists in the contribution of education to economic growth acted as a powerful stimulus. They introduced the ideas of productivity and efficiency to the planning of education and in terms of manpower requirement.

Third, the education has become even more important to the individual in modern societies because the status, job and income of people depend on their education. In particular the distribution of educational opportunities among individuals and social groups has become an increasingly important public policy issues. The planning is closely bound up with choices and decisions. The planner has on the one hand to translate policies into programmes for future action and on the other hand to contribute to the development of policy by exploring the existing and alternative approaches.

OBJECTIVES

The purpose of this unit is to enable the students of this course to,

1. Examine the manner in which the Ministry of Education defines the goals and takes decisions to achieve the targets set in the plan.
2. Evaluate the effectiveness of the administrative organization for planning and plan implementation.
3. Assess the adequacy, relevance and efficiency of administrative measures and procedures resorted to by the Ministry.
4. Explore ways and means of extending the planning process beyond the narrow limits of bureaucratic machinery by ensuring the participation of planner and.
5. Know the activities of various departments. Organizations and agencies which are responsible for the development of educational plans in Pakistan.

1. OBJECTIVES OF THE PLAN

Planning involves the formation of a national programme of action for achieving development objectives. Waterson (1971, P.26) is of the view that planning is in essence, an organized, conscious and continual attempt to select the best available alternates to achieve specific goals.

The first step in any planning process is to determine the principal goals or objectives. Once overall objectives have been set the various possible ways of achieving them should be considered. This involves choice among alternative strategies. In education universally applicable objectives have been in existence i.e.

- 1.1
 - i) The physical, mental and emotional adjustment of individual to the society in which he is brought up,
 - ii) the economic validity of the individual and the society, and
 - iii) the preservation of the cultural identity of the social values.
- 1.2 When a political party in its election manifesto announces its educational objectives first of all it decides on the,
 - i) order of priority it assigns to personal adjustments, economic viability and cultural identity,
 - ii) the means by which the chosen goals are achieved,
 - iii) the rate at which the modern sector in education is extended to take over the functions of the traditional system.
- 1.3 The objectives mentioned above could be achieved in following ways:
 - i) integrating education with national development,
 - ii) correlating education to national economic, social and cultural needs,
 - iii) developing a vocational and technical bias in education,
 - iv) improving the quality of all levels of education
 - v) introducing universal primary education, and
 - vi) ensuring equality of educational opportunity.
- 1.4 The politicians are by themselves in the realm of pious hopes and many of them have been exasperated by their lack of precision. They both by inclination and by the pressure of particular working climate prefer targets which fire popular imagination. Reducing them to workable proposition is a professional function which has to be undertaken by the senior staff of the ministry operating close to the vortex of political power.
- 1.5 The interpretation of political targets in terms of practical educational objectives is the most important function of the ministry of education. In this function the professional administrators have many advantages over the politician and minister.
- 1.6 With the complexity of administrative organisations and multiplicity of laws, regulations, precedents and conventions which govern administrative action in any bureaucracy tends to flow into the hands of those with the highest knowledge and greatest-capacity for work. The indispensability of the administrator, achieved through knowledge and efficiency has always been the stabilizing factor and this type of stability is essential to the ministry of education before it begins to define objectives and undertake planning.

2. PLANNING FOR PLANNING

2.1 The Ministry of Education has necessarily to begin by planning the very process of planning. These matters demand its attention:

- i) the organisation available or desirable to handle the planning operation,
- ii) the administrative limitations to planning and plan implementation,
- iii) the gathering and processing of basic data required for planning.

2.2 Simple as they may appear to be, most of the problems of educational planning arise right at the time of commencement these are as under:-

- i) the total absence or shortage of qualified, officers to fill positions of technocrats in the planning organization.
- ii) the incompetence of the existing administrative staff to reorganize itself and the inadaptability of the administrative machinery to meet demands of planning.
- iii) the absence, inadequacy or inaccuracy of data available both from outside or within the Ministry.

Among them the least difficult problem to solve is (a) use of foreign technical assistance and training programmes that can produce the men needed for specialized functions and (b) positive remedial steps to reorganize and modernize administration should be given priority in the preparation for planning.

3. EDUCATION MINISTRY-THE PLANNING ORGANIZATION

As the concept of planning began to influence educational administration a decade or two ago. Some sort of planning organization was considered necessary either within the Central Planning Organization or within the Ministry of Education. The central planning organization very often had a sub-commission on education. When planning units were established in the Ministries of Education, they tended to be no different from any other administrative unit and it could exercise no control of authority over other branches which actually carried out the functions of implementation.

3.1 Out of that need involved the high powered commission appointed to be incharge of educational planning headed by the Minister himself and his permanent secretary serviced by specialists and supported by the specialized services of the Ministry. A question can be raised about its location. Should such a commission necessarily be in the Ministry of Education? Would it not be more efficient if it was within the central planning organization? The answer to these questions is dependent on the traditional administrative pattern of each country. An important principle of administrative science favours the direct involvement of the Ministry of Education in educational planning.

3.2 As planning to be effective should take place at every level of policy and decision-making. A hierarchy of administrative organizations with clearly defined limits of authority and responsibility is absolutely necessary. Such a system of planning organizations would extend right down to the grass root level i.e. school.

3.3 The creation of planning organizations at each level and each institution is the most effective way of allowing the participation of the society, as a whole in the planning process. But this is more easily said than done. Further we go from the Central Planning Organization, the greater is the tendency to lose sight, of the overall picture. The outcome of the situation is made more complicated by the fact that local and institutional administrators are often less qualified less experienced, less able and are without any concept of planned national development. Therefore the local interest in educational planning should be involved with the following considerations:

- i) careful definition of functions, authority and responsibility of each planning organization,
- ii) issue of clear cut terms of reference and unambiguous guidelines in relation to national objectives and limitation of resources,
- iii) familiarizing all administrators in concepts and techniques of planning,
- iv) a programme of public education using every available mass-media.

4. RE-ORGANIZATION AND MODERNIZATION OF ADMINISTRATION

4.1 The multi-faceted controlled pattern of educational administration imposed by tradition, convention and constitution is further complicated by problems of centralization, decentralization and recentralization of authority. The decades of in-breeding as a result of which educational administrators were produced from the within the system with little or no specialized training in administration have in most countries left legacy of prejudices and stereotyped attitudes and standards. Moreover the psychological reaction of the existing personnel who consider changes as challenges to personal security and well being is not conducive to self-renewal, or development of efficiency.

4.2 Therefore the operational barriers in educational administration arise from several factors,

- i) *Personnel*: i.e. understaffing, dearth of administrative talents, inadequacy of leadership, want of training and re-training.
- ii) *Material* — limitation in physical plants, inadequacy of up-to-date machinery and equipment, limitations in mobility and communication.
- iii) *Methodological* — wasteful and time consuming procedures need for administrative streamlining,
- iv) *Informational* — the absence, inadequacy or inaccuracy of information and data available or retrievable for decision making purposes,
- v) *Legal* — antiquated legislation, multiplicity of rules and regulations rigidity in the devolution of authority and responsibility.
- vi) *Political* — inadequacy in political leadership, in-experience and expediency.

vii) *Public Relations* — absence or inadequacy of direct contact with the public.

4.3 When faced with these problems, the educational administration has to be restrict its operational activities as,

- a) routine maintenance of services
- b) rigid personnel administration, particularly through transfers and disciplinary control
- c. divorcing administration from the technical aspects of the services administered
- d. avoidance of controversial issues.

The above barriers in the implementation and management of plan can be eliminated through the process of re-organization and modernization of educational administration. The administrator can handle the challenging task by creating an atmosphere of change and innovation.

4.4 The search for new techniques of administration would be facilitated by borrowing discriminatingly from management principles which have streamlined the industrial and commercial enterprises. Although we consider administrative reorganization and modernization as a step in planning for planning. It would be necessary to include in the plan measures for the improvement of administration and continue to give them as much attention as other aspects of educational development, if not more.

5. DATA GATHERING AND PROCESSING

As a preparation for planning the ministry requires information and material in the form of:

5.1 Data Obtained from Outside Sources, e.g.

- i) information regarding the macro-economic plan, the allocation of resources and manpower requirements.
- ii) demographic data from the census authorities.
- iii) information on traditional values, social and cultural prejudices, preferences, political awareness and ideologies.
- iv) information relevant to the expansion of educational facilities such as the availability of land for building, the capacity of the building, trade to handle educational buildings, industrial and trade limitations which pertain to the supply of equipment.

5.2 Data prepared and available in the ministry, e.g. statistics or pupils, classes, schools and other institutions, teachers,, administrators, physical plants and facilities and costs.

5.3 Data to be worked out from 6.1 and 6.2 above for specific requirements of planning, e.g.

- i) enrolment, drop-out, repetition, promotion rates and age grade analysis of pupils.
- ii) qualification; distribution, shortage and excesses, training and retraining

- facilities of teachers.
- iii) distribution, adequacy and actual conditions of school plants and facilities.
- iv) interpretation of manpower forecasts in terms of educational qualifications and relating manpower needs to educational output,
- v) Unit costs and analysis of educational expenditure.

The gathering and processing of the above data do not constitute planning. These are only the tools for planning and the time and energy spent on their acquisition is justified only making decisions realistically.

6. PLANNING BEGINS

6.1 Decision-making

Planning begins when decisions are taken for action and means of achieving goals are worked out. Decision making is fundamentally an administrative action and an administrator seeks for the better course of action i.e. what under given circumstances is feasible to take him nearer to the accomplishment of his goals. He is rarely allowed the luxury of waiting for inspiration or until all factors and alternatives are examined so that he can choose the best course of action.

6.2 Decision-making has in recent years received much attention and ways and means of equipping the administrator to make better decisions have been worked out. These are not only applicable to educational planning but also essential in view of the complexity of problems and alternative solution.

6.3 Assessment of Variables

Whatever the approach adopted by each country planning involves a preliminary assessment of objectives, resources and means in terms of constants and variables. Though it would appear at the outset that school plant facilities and teachers are all constants, there is in the field of education only one main constant namely, the financial resources. All other factors are variables in the sense that adjustments and modifications can be made in them to the extent that funds are available. The principal variables are as under:

6.3.1 Pupils

The number of pupils to be enrolled in different levels of education,

- age of admission
- the compulsory school going age
- distribution of pupils into different types of education and institutions.

6.3.2 Teachers

- number of teachers to be employed
- distribution of teachers into different specialties, levels and types of education by means of recruitment and pre-service training
- proficiency of teachers for different specialties, levels and types of education

- by means of retraining
- conditions of service
- teacher pupil ratio

6.3.3 Content

- subject and subject groupings
- curricula
- syllabuses

6.3.4 Structure

- age grade structure
- class organization
- school institution structure-
- out-of-school educational activity

6.3.5 Method

- instructional methodology
- course guides
- textbooks
- teaching aids
- machines, radio, television, etc.

6.3.6 Evaluation

- units and credits
- scholastic and aptitude tests
- vocational and educational guidance
- examination system

6.3.7 Physical Plant and Facilities

- location of schools and institutions
- optimum use of plant and facilities
- school architecture and building materials'
- cost of building and equipping
- improvisation of equipment and apparatus

6.3.8 Additional Financial Resources

- community participation e.g. self help
- productive educational activities e.g. (school farms, bakeries, repair shops)
- cultural role of the school i.e. (community entertainment)
- industrial problem-solving and research (e.g. universities undertaking research for the industry or other organizations)
- extension services

Of all these '*variables*' at the disposal of educational planner, he rarely uses anything other than:

- 1) number of pupils to be enrolled, adjusting the number according to the availability of funds
- 2) number of teachers to be employed,
- 3) teacher pupil ratio increasing it as a means of reducing cost of teachers,
- 4) number of working hours and allocation of periods, organizing double sessions to avoid congestion.

These are important for the arithmetic of planning. These factors are especially favoured by the economists in educational planning, for they centred round problems of economics.

The main justification for entrusting educational planning to the Ministry of Education is that it is functionally better equipped to explore ways and means of modifying all these variables for the achievement of optimum results. That is the fundamental approach to utilizing 'optimal means.' So it is important that this function be assigned the highest priority among the duties of the Ministry. This function should not be entrusted to an ad-hoc agency like the Planning Unit.

6.4 The Planning Unit may direct the operations from the centre, the fourfold functions connected with them namely:

- a) research (action research)
- b) experimentation
- c) consultation with experts (teachers and public opinion)
- d) pre-testing in pilot projects,

should be undertaken by each of the branches concerned with these *variables* with the active cooperation of the educational field staff. The inspiration and inducement for changes and innovations should emanate from the highest authority in the Ministry, and incentives should be provided for every member in the Ministry to put forward suggestions. Regular conferences and discussions similar to the brain-storming sessions and arrangement to collect and process ideas which may arise outside the Ministry, should be put into operation. The public must be encouraged to think and comment on how the variables in educational planning can be adjusted and modified to bring about the desired results. As no one holds the monopoly for new and brilliant ideas no section of the public should be kept out.

But ideas do not arise in a vacuum. The ministry has to take the lead. Problems should be identified and 'constants' and constraints lucidly explained.

6.5 An educational planner right at the commencement of his work discovers two disconcerting facts:

- (a) 80-90 percent of the Educational budget is already committed for; recurrent and continuing projects and only 10-20 percent of it is available for new projects;
- (b) 80-90 percent of the administrative time is already committed for functions of a maintenance nature and when it comes to the senior officers, whose involvement is indispensable to planning, the percentage of time taken up by

supervisory, ceremonial political and public relations functions is even greater. Finding more administrative time for planning is thus another of the very urgent functions of the planner.

Once the Ministry by given planning as much of the administrative time and talent as possible and carrying out a full range of consultations at all levels has decided upon strategies as regards the modification of '*variables*' to suit targets of the plan, the major function of the planning is almost fully accomplished. The arithmetical formulation of the plan is a routine exercise of giving expressions to decisions made on a much wider coverage of data than educational statistics.

7. FORMULATION OF PLAN

The purpose of planning is primarily two fields:

- a) to present a act of decision to the appropriate national authorities for approval.
- b) to provide a blue print for action by the various agencies responsible for implanting their decisions. For both the purposes the authorities/agencies requires a clear statements and proposals. Preparation of such options and proposals are referred as plan formulation. These process comparison different efforts on the part of education plans.

7.1 *The first draft of the plan*, which the planning unit of the secretariat of the educational planning commission or Committee prepares, is nothing more than the elaboration and logical arrangements of decisions made by the committee. Its main objectives are to:

- a) achieve a measure of internal consistency among different programmes and projects;
- b) indicate the adequacy of the resources available to education by the central planning organization;
- c) suggest an order of priority and a pattern of phasing for various activities, such as building, equipping and teacher training;
- d) establish the feasibility of the plan as a whole as well as of specific projects included in it.

This being the first draft need revision of targets, strategies and policies in the light of the overall picture it presents. It is confidential and limited in circulation.

7.2 The planning unit also suggests alternative approaches in matters which need reconsideration due to problems of feasibility, inadequacy of resources etc. *The second draft* will embody the revised strategies and policies. It should be a detailed presentation of all relevant data and care should be taken in its preparation i.e.

- i) to ensure that it is in plain language with little or no technical jargon;

- ii) to make it both readable and convincing as a document meant to win the support of the people rather than baffle them;
- iii) to emphasize that everything contained in it is for examination and criticism and is bound to be amended in the light of the comments made by the people.

The psychological climate created by throwing open the document to public criticism would become fruitful only if adequately efficient machinery is established at the ministry to receive and process the comments with the seriousness they deserve. Newspapers, public meetings, seminars, interviews, memoranda are among the main means by which public opinion will be normally expressed. If the machinery, handling criticism is reasonably receptive and considerate there will be no need for the public or any section affected by the plan to resort to any disorderly or violent forms of expressing its disapproval of any proposals.

7.3 The preparation of *third draft* will need a fresh set of guidelines from the committee in the light of the opinions expressed by various persons, organizations and political agencies. To obtain these decisions, the planning unit should identify the principal points of controversy, suggest alternative suggestions and indicate limitations imposed by resources feasibility and the need for consistency. The period of preparing the *third draft* will be marked in the form of informal consultations with the Central Planning Organization, the Ministry of Finance, the Treasury and above all, the head of the Government. The most important part of the planning operation is carried out through these consultations in which the administrators and planners play the role of bargainers. Once the *third draft* is approved by the Committee Commission, it has the authority of a *technically* as well as politically acceptable document, for which the prior concurrence of everyone concerned has been informally obtained. Under such circumstances, the final approval of the plan by government and its incorporation in the legislative enactments of the country are purely formal.

The next function of the Ministry of Education is most significant as the successful implementation of the plan depends very heavily on it. This is the organization of the public education and information service to ensure public cooperation for the plan.

8. PLAN IMPLEMENTATION

8.1 Where some of the agencies controlling education are private, and autonomous, the manner in which their activities are incorporated in plan implementation (e.g. legislative compulsion, grants, incentives), too, should have received due attention. Where more than one governmental or non-governmental agency plays a special role in the achievement of plan targets the lines of communication and the machinery or coordination among them should be worked out and where their participation is complex, such techniques as i) PERT ii) CBA should be employed to establish their interaction on a time-priority basis. You have already studied about PERT and CBA in the course plan implementation and management.

8.2 Elaborating the plan and reducing it to programmes and projects is administratively a function of delegating the implementation to branches, regional organizations and institutions. Each such delegation of function has to be accompanied by a delegation of authority and responsibility which for effective functioning of an administrative organism should be co-equal. This is set in motion as:

- a) instructions and directives are passed from the higher level to the lower level;
- b) information and data are obtained from the lower level in the form of reports;
- c) instructions and directives are evaluated in the light of such reports;
- d) revised instructions and directives are issued to the lower level.

8.3 The process once set in motion goes on and on without interruption. The speed with which the higher level solves the problems reported by the lower level is the keynote to administrative effectiveness in plan implementation and this requires the organization of problem solving services at every level of the administrative machinery.

8.4 *The budget* is an effective instrument of delegating functions and responsibilities to various levels. Apart from the legal force, it specifies operational limits in terms of money, allowing the administration to the capacity and ingenuity of decision makers. Even if parliament approves a budget in outline, indicating only broad divisions of expenditure, it is advantageous for plan implementation of the budget is further analyzed into programmes and projects and sub-divided according to different levels of administration right down to that of the school.

8.5 In brief, the plan implementation calls for a continuous:

- a) review of progress
- b) evaluation of the effectiveness, of methods
- c) revision and adjustment of targets and strategies
- d) measures to meet unforeseen contingencies.

Equally important is to extract out of the experiences gained by the implementation of one plan guideline which will be useful in the preparation of the next plan as the implementation of the current plan and preparation of the next have to be a simultaneous and closely intertwined process.

9. PLANNING PROCESS IN PAKISTAN

9.1 It starts with the formation of education policy. After an education policy has been approved by the Federal Government in consultation with the Provincial governments and the universities, it serves as a framework, providing guidelines for the Federal and Provincial planning offices to act upon. The preliminary drafts of plans received from the Provincial Government and universities are then adjusted and coordinated by the Federal Education Ministry in consultation with the Planning Commission. The Federal Ministry of Finance and the Finance departments in the provinces are brought in to ensure that plans developed and approved will receive the necessary financial support.

9.2 After education plans have been developed and approved, the education departments, universities and other agencies concerned embark upon the task of formulation of detailed schemes in forms prescribed for the purpose by the Federal Planning Commission. In order to expedite their approval, the projects undergo detailed scrutiny in meetings of "Development Working Parties" in which all the concerned parties participate. Regarding their developing working parties you have already studied in the course plan implementation and management I and II. After a project is cleared by the development working parties it is submitted to the Executive Committee of the National Economic Council which gives the final report.

9.3 When a scheme receives the final approval of the government, funds are provided for it in the budget and it is put into practice. During the process of its implementation, the Director of the Project submits regular quarterly progress reports to all agencies concerned ending with a completion report.

10. PITFALLS OF PLANNING

10.1 All the above represents considerable benefits from a well worked out plan and accounts for the wide prevalence of this kind of effort. However when we turn from the theoretical advantage of this kind of a venture to its practical affects we immediately become aware of a host of problems involved. Many of these development plans presuppose a highly improbable degree of political and economic stability, above all, a commitment to planning on the part of politicians, which many not always exist. Many development plans are in fact operationally a dead letter as soon as they are published. Some are published well after the beginning of the plan period to which they refer. The real effort of writing a plan is very considerable and takes up the time of large numbers of key personnel for a considerable period, infact diverting them from other immediate policy issues which may be even more important. The need to achieve consistency and coordination between sectors in the preparation of the plan involves long meetings and several revisions of the plan.

10.2 A major source of error in many development plans originates in the tendency of concentrating only on activities where data is readily available, and which are subject to direct control by government. This is apparent in the education sphere where statistics may cover only government schools with any degree of reliability. For private schools data may not be forth coming and government's power to influence their development may be limited. Consequently the forecast of output from the education system often covers only

public sector schools and may ignore the very large numbers graduating from private schools and colleges. However in the current situation the data of private schools and colleges may be possible due to warning of nearly established institution; Private Educational Institutions Regulatory Authority (PEIRA).

10.3 From a manpower planning point of view it is of course essential that all outputs should be taken into account. Ideally planning should be comprehensive but it is all too tempting to forget about those sectors of activity which are not subject to government financing and control, or where measurement is difficult.

For the same reason plans give more emphasis to specific new institutional activities and projects, training programmes to be mounted and buildings to be erected. By contrast there is often too little attention given to incentive structures to affect the behaviour of individuals and private organizations and to channel it in desired directions. A development plan should be much more than an investment programme, but frequently plans seem in fact to be little more than long list of projects in the public sector. In fact the number of new schools to be built may be less important for healthy educational development than measures to restrict the turnover of teachers, to provide better guidance facilities for pupils or to attract students to those courses regarded as particularly important for national development.

10.4 This is not to say that plans do not make policy recommendations. Thus, for example, *The Sixth Five Year Plan 1983- 88* contain the following proposal:

"To provide graduate science teachers to the schools, it is proposed to train the teachers through a special training programme financed by the Federal Government. Under this programme, F.Sc qualified young men and women with at least a high second division will be financially supported to take B.Sc and B.Ed, courses at Government expense provided they are willing to teach in high schools for a minimum period of 5 years."

It is obvious that the plan documents do contain policy recommendations designed to correct structural and qualitative imbalances. This, however, does not take away the criticism that the plan documents contain a preponderance of investment proposals.

10.5 The ambivalent attitude of political leaders to development plans must also be borne in mind in thinking about the contribution that development planning can make. On the one hand politicians enjoy the prestige and publicity that publishing a development plan can bring. On the other hand in the face of uncertainty people do not like to be committed to specific course of action. Ministries of Finance or external aid agencies do of course want to be committed to the Ministry of Education for certain actions to which money will be put. But a politician does not want his hands tied; particularly a new Minister of Education does not want to be bound by the details of a plan drawn up by his predecessors.

He has to be more interested in political survival and maintaining his political support than with loyalty of a plan document. Generally speaking documents like plans must be regarded as made for men; men are not made to be subservient to plans. A plan will only be followed so long as it serves the interest of those who direct national affairs. This is a powerful document for trying not to predetermine future action too specifically or too far ahead; and for leaving as much flexibility as possible.

11. CONCLUSION

The plan serves a useful purpose by setting out the main objectives of national developments for the specified number of years ahead by estimating the resources required for achieving these national objectives, by focusing upon the problems, issues and bottlenecks that must be tackled to forge ahead and by outlining the strategies to be adopted in achieving stated national objectives.

The plan document contains policy recommendations which are designed to correct structural and qualitative imbalances. The functional analysis of educational planning from the view point of ministry of education leads us to several conclusions.

11.1 Ministry of Education is most desirable administrative organization to undertake educational planning.

11.2 The ideal machinery for planning is an Educational Planning Committee/Commission headed by the Minister himself or the permanent secretary.

11.3 The process of planning to plan requires besides data gathering and processing the re-organisation of the administrative machinery.

11.4 Planning in education calls for the identification of '*Variables*' in educational process and practices and modifying them to suit the needs, targets and constraints of resources.

11.5 For the plan implementation an efficient and psychologically conditioned machinery is necessary.

11.6 For plan implementation delegation of authority and responsibility, with measures of autonomy guaranteed to each level particularly to the universities, colleges and schools etc. is necessary.

11.7 The implementation, evaluation and revision of the current plan and the preparation of the next have to be a simultaneous.

In this introductory unit on the process of educational planning some basic concepts relating to educational planning have been presented. Attention has also been drawn to the special characteristics of education itself which have important bearing on educational planning.

The unit has thus set the stage for a detailed study of different techniques used in the process of educational planning.

12. RECOMMENDED READING

1. A.W.P. Gurage *Functional Analysis of Educational Planning*. Administrative Aspects of Educational Planning (An IIEP Seminar), Institute for Educational Planning, 1970 Paris.
2. *Report of the Seminar for Senior Educational Administrators on Education Policies and Planning* Compiled by Dr. Sarfraz Khawaja, Academy of Educational Planning and Management, Islamabad, Oct., 1986.
3. Y Dror, *Specialists vs. Generalists*, a miss question, Rand Corporation Santa Monica, 1968.
4. Y Dror, *Some Normative Implications of a Systems view of Policy Making*, Rand, Corporation 1968.
5. CE. Beeby, *Planning and the Educational Administrator*, Paris UNESCO IIEP, 1967.
6. UNESCO Educational Planning: *A Survey of Problems and Prospects*, Working, paper for international conference on Educational Planning, Paris, August, 1968.

13. SELF ASSESSMENT QUESTIONS

- Q. 1 What is educational planning?
- Q. 2 What are the objectives of education and how these can be achieved?
- Q. 3 How the Ministry of Education implement the targets set by the politician?
- Q. 4 How the Ministry of Education plan for planning, and what kind of problems are confronted in this process?
- Q. 5 "Planning Organization should extend right down to the grass root level i.e. school". Give your comments on the statement.
- Q. 6 What are the operational barriers and how these arise in educational administration? How these can be over-come?
- Q. 7. What kind of data and information is needed to the Ministry of Education in the process of preparation of plan.
- Q. 8 Discuss the importance of decision-making in educational planning.
- Q. 9 What are the principal variables at the disposal of educational planner and which are often used.
- Q. 10 Write down the characteristics of first, second and third draft of the plan and what kinds of technicalities are involved in the preparation of the drafts.
- Q. 11 How the plan is implemented.
- Q. 12 What is the role of budget in the process of implementation of plan?
- Q. 13 Discuss the planning process in Pakistan.
- Q. 14 Discuss the pitfalls of planning.
- Q. 15 What conclusions can, be drawn from the functional analysis of educational planning?

Unit–2

EDUCATIONAL PLANNING PROCESS IN PAKISTAN (UNESCO MATERIAL)

Revised by:

Dr. Shaukat Ali Siddiqui

Reviewed by:

Dr. Syed Manzoor Hussain Shah

CONTENTS

S.No	Description	Page No.
	Introduction.....	21
	Objectives.....	21
1.	Stages for Planning.....	22
1.1	Pre-Planning Stage-Formulation of Objectives	22
1.2	Planning Stage	23
1.3	Plan Formulation Stage.....	24
1.4	Plan Elaboration Stage	25
1.5	Plan Implementation Stage.....	26
1.6	Evaluation, Revision and Re-planning Stage.....	26
2.	Types of Plan	28
2.1	Medium-Term Plan.....	28
2.2	The Rolling Plan	28
2.3	The Short-Term Plan.....	29
2.4	Other Types of Plan	29
2.5	Planning Experience in Pakistan.....	29
3.	Process of Education Planning in Pakistan.....	30
3.1	Constitutional Position	30
3.2	The Process of Plan Formulation.....	31
3.3	The process of Project Planning.....	32
3.4	The Administrative Machinery for Educational Planning.....	33
3.5	Allocation of Development Funds	34
4.	Major Activities Performed at Different Stages of Planning.....	35
5.	Financial Powers of Various Bodies.....	36
6.	Conclusion	37
7.	Self-Assessment Question.....	38
8.	Key to Exercise	38

INTRODUCTION

The process of planning goes through a well defined chain of stages right from the inception to the evaluation phase. It is quite customary to go through these stages in an organized system. However in situation where the system is more elaborately organized the stages may be increased by bringing in other relevant steps. Generally these steps are related to one of the stages of planning and may well be considered as a more precise refinement of a particular stage.

Diagram Showing Process of Educational Planning



Fig-1

OBJECTIVES

After reading this unit the students will be able to:

- explain the process of Planning into various stages
- define and describe the types of plans i.e. long-term short-term and medium term plans
- understand the organizational machinery for planning in Pakistan
- apply the planning process in his/her own circumstances
- to understand the process for project planning.

1. STAGES FOR PLANNING

Broadly speaking the process may be enumerated in the following six stages

- i) Pre-planning
- ii) Planning
- iii) Plan Formulation
- iv) Plan Elaboration
- v) Plan Implementation
- vi) Evaluation

These six stages of the planning process are diagrammatically represented in figure 1. We shall briefly discuss the main elements of each of these stages before proceeding to a more detailed discussion of some of the more important ones.

1.1 Preplanning Stage-Formulation of Objectives

The planning process starts with the formulation of a policy to undertake a plan or project. Although the policy formulation stage starts without the active participation of the practicing planners, still it is deemed essential to involve high level planner's right at the inception stage. Generally, the policy is formed at the political level, but in case of education policies, senior educationists are invariably involved in the policy formulation process to ensure effective implementation by them. These educationists serve as mediators between the political exigencies of the policy makers and technical requirements of the planners.

Almost all developing countries of the Asian Region have some sort of organization to plan education. If they did not, the pre-planning stage would begin with (i) the creation of a suitable planning organization, (ii) the establishment of planning procedures, (iii) the structural reorganization of the educational administrative machinery to participate in the formulation and implementation of plans, and (iv) setting up the machinery and the procedures for the collection and analysis of the statistical and other data required for planning. Where these have already been accomplished, the principle pre-planning activity is to have the national educational objectives specifically defined by the appropriate authority, which is generally the Cabinet or the Education Minister.

Generally the objectives are defined very loosely in policy documents. In such cases, the planners would need to specify the objectives in more behavioural terms so as to ensure optimum precision in the planning process. For example, the education policy may emphasize the need for qualitative improvement in higher education. The planner shall have to translate qualitative improvement in terms of changes desired in the output of institutions of higher learning. He shall then have to identify input measures which could produce the desired result. Going through this process he may for example, propose the following programmes to achieve the desired objectives:

- i) improve physical facilities (buildings, furniture and equipment) in institutions of higher learning
- ii) augment library resources of colleges/universities

- iii) develop courses of study designed to produce marketable skills
- iv) revise programmes for the training of teachers
- v) arrange extension lectures by eminent scholars
- vi) organize summer schools
- vii) modify the system of examination so as to encourage talent

1.2 Planning Stage

This stage comprises six principal steps which are describe as following:

a. **Diagnosis:**

Once the national educational objectives are specifically defined, the first step to be taken by the educational planner is to ascertain whether the current educational effort of the country is adequate; relevant and conducive to their achievement. This is done by matching the output of the educational effort with the objectives and noting the salient divergences. This exercise is called diagnosis and it leads to the identification of weaknesses and shortfalls in nature, magnitude, quality, organization and level of performance of the national education activities. The criteria for this diagnosis are dictated by national educational objectives.

The performance of education sector remained utterly deficient. Overall, the participation rate of primary school age population improved from 17 per cent to 48 per cent during the first thirty-five years of our independence.

- i) *Relevance*: The diagnosis would seek to determine whether and how far the education system was relevant to national and social aspirations. For example, the diagnosis may seek to determine whether the system was meeting the manpower needs of the country, or whether it was helping in the evolution of the socio-economic order which the nation seeks to evolve. In general, the diagnosis may try to assess whether the system was meeting the needs of different segments of society.
- ii) *Effectiveness in achieving national objectives in full*. Thus diagnosis would seek to assess whether or not the education system was providing “equal educational opportunities to all citizens,” imparting “quality education,” providing “a minimum acceptable level of functional literacy and fundamental education to all citizens, etc. as provided in the *National Education Policy, 1979*. Here the emphasize is on assessing the effectiveness of the system to achieve national objectives through an analysis of the output of the system.
- iii) *Efficiency in the best use of resources to achieve maximum results*. The diagnosis also seeks to assess whether the education system is achieving at lowest cost whatever it is designed to achieve. High drop-out rate at primary and high percentage of failure at higher secondary, degree and postgraduate levels are waste of resources and highlight the low efficiency of the education system.

b. **Formulation of Policy:**

The diagnosis of the existing educational situation would highlight defects and deficiencies which are to be corrected so as to enhance relevance, effectiveness and efficiency. Corrective actions have to be based on a policy which has to be spelled out to indicate the general framework within which detailed decisions are to be made. For

example, the *Fifth Five-year Plan (1978-83)* formulates the following policy.

c. Costing of Future Needs:

The next step in the planning stage is to cost the future needs. Using the best available cost data, each group of needs is costed with due consideration to fluctuations in prices and long range trends. At the conclusion of this exercise, the planner knows the total financial outlay which should be available if all needs are to be satisfied.

d. Establishment of Priorities and Target Setting

At the time of analyzing data for planning purposes, the educational planner would have taken stock of the resources available to educational development from various sources, governmental and non-governmental, national and foreign. If these data are extrapolated into the future, he would get an idea of the resources which could be reasonably anticipated on the basis of past trends. But in most countries the financial outlay for education would have, already, been indicated in a macro-economic plan. This would give at least the governmental share in the anticipated expenditure on education. With data from either of these sources, the educational planner reviews the future needs worked out at the previous stage (c), established priorities among competing candidates for resources and sets the targets which can realistically be achieved with the anticipated investment of resources. This is the stage when alternative means of achieving the objectives are examined in order to determine the most relevant and effective ones within the allowable cost.

Thus if provision is to be made for a number of 5 year old children it may be considered whether all should be provided seats in new primary schools or some may be accommodated in new mosque schools and some in existing under-utilized schools or a combination of both. Similarly, if facilities are to be provided for the increased output of high schools it needs to be considered whether higher secondary classes may be added to some high schools or the entire number should be provided seats in new colleges or a certain proportion should be accommodated by opening higher secondary classes in high schools while others could be provided for the better utilization of existing colleges, expansion of existing colleges and opening of new colleges. These proposals are then sent to the policy makers for approval at political level.

e. Feasibility Testing:

The targets are set according to the needs that have been identified and the priorities assigned. Before undertaking the plan formulation, it will be essential to analyze them critically to determine whether it is feasible to attain these targets. It should be realized that every administrative machinery can attain targets are too high some new administrative arrangement shall have to be made which may delay attainment of target. In the light of this analysis the targets will be adjusted or modified.

1.3 Plan Formulation Stage

The plan proposals serve two main purposes:

- a. initially, to present a set of proposals to the appropriate national authorities for

- consideration/decision and
- b. later, to provide a blue-print for action by various agencies responsible for implementing those decisions.

To facilitate both these tasks it is necessary that the proposals should be formulated clearly. The preparation of plan proposals in clear terms is referred to as Plan Formulation, It calls for certain skills as the statement has to be brief, succinct and, at the same time, adequate.

1.4 Plan Elaboration Stage

It was stated in the previous paragraph that the plan, at the formulation stage, is a brief and succinct statement. Before it can be implemented, it has to be elaborated or expanded upto the point that individual action units become identifiable. This stage is known as Plan Elaboration stage:

a. Programming:

Programming involves dividing up the plan into broad areas each of which aims at accomplishing a specific objective. Each action area is called a programme. Thus, for example, the *Ninth Five Year Plan* identified the following programmes for the development of primary education during the plan period:

- Consolidation/reconstruction of existing schools.
- Opening of new schools.
- Construction of teacher's residences.
- Opening of Adult education libraries in primary schools.

Usually a programme comprises all activities which are supervised by the same administrative unit or which are so interdependent and complementary that all have to be done simultaneously or sequentially.

b. Project Identification and Formulation:

Each programme consists of activities which can be grouped together to form a unit for administrative or accounting purposes. Such a unit is called a Project. A Project usually aims at achieving a specific sub-objective or target within the main objective of the programme. Thus "construction of buildings of 15 primary schools in Rajanpur District," "opening of 40 new primary schools in Mala Kand Division" "supply of AV aids to schools in Nasirabad District," etc., could be some of the projects for the implementation of the primary education programmes. Projects have to be identified and formulated so as to enable them to be executed. Project formulation is the task of working out the details of activities, cost, time, schedules, etc. for a project. Until a plan has been subjected to Programming and Project Identification and Formulation, the actual implementation cannot be undertaken. Hence, this is a very important stage. In other words project provides practical exaction of the plan and policy. In most countries the problem of non-implementation of plan has been traced to weaknesses in this link of the planning process.

There is a further step in the elaboration of a plan which is optional. That is Regionalization. Regionalization means the distribution of the provisions of a plan to geographically identifiable units, such as States, Provinces, Regions, Districts, Municipalities, Municipal Corporations, and Villages etc. Regionalization applies to the

plan as a whole when it is prepared for the entire country. It can also apply to a Programme or a Project. The Annual Development Programmes (A.D.P.) of the KPK provides a clear example of regionalization of programmes. The ADP is actually composed of District Plan and most of the projects listed are identical. The target and allocation for different projects relating to different districts are clearly shown. This gives district administrators clear indication from the very beginning of the financial year what they are expected to do.

1.5 Plan Implementation Stage

The implementation of an education plan begins when individual projects are taken up for execution. Here, the Planning Process merges with the Management process of the national educational effort. Using the annual budget or the annual plan as the principal instrument, an organizational framework is developed for various projects. The resources (men, money and materials), needed for each project, are allocated. The time within which it is to be completed is indicated. Moreover, such other operational details as delegation of authority, lines of communication and consultation, of feedback and control mechanisms are also developed. Generally, the entire educational administrative organization of the nation participates in the Plan Implementation Stage. The implementation stage permeates all steps of the administrative and supervisory ladder right from the Ministry of Education upto an institution at the local level. The entire success of the plan depends upon the fact as to how efficiently various agencies coordinate their activities in the implementation of the project.

1.6 Evaluation, Revision and Preplanning Stage

As the education plan is being implemented, the machinery to evaluate the rate of progress and detect deviations is set in motion. While evaluation is normally a continuous operations, simultaneous with plan implementation, the preparation of reports may be done at fixed point (e.g. annually, mid-term or half-way point of the plan period or end-of-the-term).

Evaluation serves two purposes:

- a) It highlights weaknesses in the plan (e.g. unrealistic targets, inadequate financial provisions, improper phasing) and throws up matters for revision of the plan for the balance of the plan period.
Where the practice of “rolling plans” is adopted, each year’s rolling plan embodies revisions as necessitated by implementation experience.
- b) It takes the place of Diagnosis of the Planning Stage (see para 2.2 a) in proving the basis for preplanning. Thus, it becomes the beginning of the next cycle of planning.

With the revision of current plan and the commencement of preplanning for the next cycle, the educational planning process should continue without a break.

Major activities undertaken during the various stages of planning are summarized in Annexure I.

The above discussion is based on series of complex activities with constitutes the process of educational planning. The role of educational planner is to elaborate the national strategies of educational development into a plan of action over a selected time horizon.

SELF-ASSESSMENT EXERCISE No. 1

Match planning activities given in list A with response categories given in list B by writing the serial number of the response category in the box given before each planning activity. Remember one response category may be matched to *more than one* planning activity and some response category *may not* match with any.

List A	List B
a. Checking progress during implementation for determining needs for corrective measures.	1. Feasibility teaching
b. Allocation of resources in terms of men, money and material are made.	2. Project identification
c. Activities likely to achieve specific sub-objectives or targets are detailed.	3. Planning
d. Annual or mid-term reports on projects are prepared.	4. Evaluation, revision and preplanning
e. Involves splitting up or the plan into broad areas of activities.	5. Formulation of policy
f. Suggestions designed to achieve national development objectives are submitted for approval.	6. Plan formulation
g. Plan targets initially set are revised as a result of this analysis.	7. Programming
h. Designing measures for correcting the defects and deficiencies of the education system.	8. Plan elaboration
i. Determining the extent to which the education system is meeting national objectives.	9. Establishing priorities and target setting.
j. Defining national educational objectives	10. Plan implementation
k. Evaluating education system in terms of relevance, efficiency and effectiveness.	11. Pre-planning
l. Detailing priorities and targets.	

2. TYPES OF PLAN

The principal task of the educational planning is to elaborate the national strategy of educational development into a plan of action over a selected time horizon. A “plan may be long-term or perspective extending from 10 to 20 or even 25 years. It may be medium-term usually 4 to 7 years. Short-term plans of 1 to 3 years are also possible, while a single-purpose plan (that is, plan of action to achieve an identified goal in a short time) may extend from a few days to a couple of years. The determination of the time horizon of an educational plan is, after a political decision. But a few technical considerations such as the following must be born in mind.

Education, in the widest sense as conceived for purposes of educational development, is a social activity the results of which become measureable only after a considerable time span. In some aspects, education may be measured in a relatively short time (e.g. higher education; professional training). But the result of the activity as a whole may be visible only after several decades, For example, the success or otherwise of current educational operations will be reflected in the quality of the national labour force, and political, intellectual and social leadership of about 2000 A.D. A long-term or perspective plan, which marks out and pinpoints the major highlights and landmarks, is, therefore, a very useful instrument.

The Pakistan Planning Commission prepared two long-term or perspective plans for the periods -1965 to 1985 (twenty years) and 1988 to 2003 (fifteen years).

2.1 Medium-term Plan

Medium-term plans of 4-5 years, prepared against the back-drop of a long-term perspective plan, have operationally proved to be the most efficient. These define the goals and targets with greater clarity and provide a definite basis for action. Earlier the practice had been to prepare a series of four or five-years plans in succession: that is, First Five Year Plan (say 1960-64), Second Five Year Plan (1965-69), Third Five Year Plan (1970-74) and so on. If the financial year begins with any month other than January, the five year plan periods would be 1960-65, 1965-70 and 1970-75.

2.2 The Rolling Plan

Today one sees in many countries a new tendency which has much merit namely to prepare medium-term plans on a rolling basis, that is, extending the plan by one year at a time and revising the targets according to implementation experience. Thus if a five year plan for the period, say 1998-2003, is put in operation and an evaluation carried out towards the end of the fourth years of the plan indicated that, though the basis plan strategy was right, the targets were not likely to be fully realized it may be advisable to roll on the plan for one more year rather than prepare another live years plan with the same strategy, programmes and projects. This would allow the pace generated in the first four years to again further momentum during the next two years and attainment of targets may become easier. If, however, the evaluation carried out indicates the failure of the strategy adopted, a new five year plan may be drawn up with a changed policy orientation. A rolling plan,

rather than a new medium-term plan, is also indicated if a political change is likely to occur mid way during the plan.

2.3 The Short-term Plan

Short-term plan are generally of one to three years. Short-term planning needs to be adopted only as an inevitable alternative to medium term planning. If certain very specific defects or deficiencies are of an urgent nature and need to be corrected on an emergency basis, a short term plan may be adopted. During period of acute political uncertainty also short-term plans are more appropriate. Short-term plans have come to be linked upon as an emergency measure. The introduction of rolling plans has eliminated the need for short-term planning.

2.4 Other Types of Plan

At times need may be felt to give special attention to the development of a sector or group of sectors or to the development of a region. Accelerated development of certain sectors or regions may become a political necessity or may be deemed, necessary as a base for the overall development of the country. For these purposes special plans may be formulated which may be either sectoral plans or regional-plans. In 1952 a *Six Year National Plan of Educational Development of Pakistan* was formulated by the Ministry of Education. At the time of the preparation of the Sixth Plan it was felt that it was necessary to accelerate the development of primary education in order to launch a programme for the balanced growth of education during the next plan period. Hence the Priority Sector Special Development Programme of primary education was implemented during 1982-83. A similar accelerated development programme was implemented in the health sector also during the same year. These two Priority Sector Special Development Programmes were not published as other plan documents were. However, the *Karachi Special Development Programme*, dealing with the more pressing development needs of Karachi such as water, roads, etc. was.

2.5 Planning Experience in Pakistan

Planning started in Pakistan with the establishment of the Pakistan Planning 'Board in 1952. The first five year plan was published in 1955.

The first, 2nd and 3rd five years plans (1955-60, 1960-65, 1965-70) was approved and launched by the government of Pakistan.

1. The first five year plan mainly focused on achieving high national in course. The 2nd five year plan was to some extent continuation of first plan with more focus on less developed areas. The 3rd five years plans specially focus the education.
2. Attention was focused on improving retention rates, teachers having teachers' salaries teaching aids and physical condition of schools.

The Fourth Five Year Plan, 1970-75 was approved and launched but had to be abandoned due to war with India and the separation of East Pakistan. The People's Party government decided to implement annual plans in view of uncertain, economic situation following the creation of Bangladesh which necessitated reordering of the import-export trade.

The Fifth Five Year Plan, 1978-83 was launched and implemented by the martial law regime. The Sixth Five Year Plan, 1983-88 was also launched by the martial law regime and continued by the Muslim League government of Prime Minister Junejo with some internal adjustment.

The Seventh Five Year Plan, 1983-93 was prepared and approved by the Muslim League government of Prime Minister Junejo. The People's Party government of Prime Minister Benazir Bhutto is stated to be in the process of revising the Seventh Five Year Plan 1988-1993 but no revised version was made public and the government came to an end in 1990.

The eighth five year plan was launched in 1993. It proclaimed once again that education is an indispensable ingredient of development and a fundamental right of every individual. The plan gave consideration attention to quality of institutions.

Thus it would be seen that Pakistan has mostly adopted the medium-term plan with the exception of the period between 1970 to 1978 during which short-term plan on a rolling basis was adopted. The period between 1970 to 1978 was marked by a number of events destroying the established system, namely war with India, separation of the eastern wing from the western wing calling for the search for new export markets, encashment of a new constitution and" introduction of reforms like nationalization of industries, nationalization of educational institutions, land reforms etc.

3. PROCESS OF EDUCATIONAL PLANNING IN PAKISTAN

To fully understand the process of educational planning in Pakistan it would be advisable to first have a view of the constitutional position in respect of education and planning, and then to have a look at the available administrative machinery.

3.1 Constitutional Position

Pakistan's is a federal constitution. In theory all authority under a federal system rests with the federating units except those which the federation units agree to surrender to the federation. According to the constitution of 1973 the authority of federating units extends over a large number of subjects including education. However educational policy and planning has been placed in the concurrent list. Both the federal and provincial governments have authority on subjects included in the concurrent list though the writ of the federal government is supreme.

Under the above constitutional arrangement the provincial governments are responsible for providing education at all levels within their territorial jurisdiction. The federal government has the same responsibility in respect of territories under its direct administrative control, namely Federal Capital Territory, and the federally administered Northern Areas and Frontier Agencies known as FANA and FATA. These constitutional responsibilities of the federation are exercised respectively by the Ministry of Education, Ministry of Kashmir Affairs and Northern Affairs, and Ministry of State and Frontier Regions.

While the provincial governments have the authority and the responsibility to provide facilities for education at all levels within their territorial jurisdiction, matters relating to educational policy and planning are the joint responsibility of the federal and provincial governments. Accordingly, formulation of educational policies and the drawing up of educational plans is carried out through mutual consultation between the federal and provincial governments. Different institutional and administrative arrangements have been evolved at different times to ensure participation of federating units in decision-making pertaining to these areas. For a number of years preceding separation of East Pakistan, for example, the Planning Commission consisted of a chairman and four members, two from East Pakistan and two from West Pakistan. Similarly, the National Commission on Education appointed Gen. Ayub Khan had an equal number of members from East and West Pakistan. To ensure full participation and involvement of all federating units in decision-making, consultation is carried out with the provincial governments at all stages of formulation of education policy and educational plans. Besides, the final authority to approve an education policy rests with the cabinet and that in respect of educational plan rests with the National Economic Council headed by the Prime Minister. On both are provinces fully represented particularly the National Economic Council whose members include chief ministers of all the provinces. Thus while formulation of educational policies and plans are primarily the responsibility of the federation these are formulated in full consultation with the federating units.

3.2 The Process of Plan Formulation

The process of plan formulation starts with a signal from political leadership more than a year ahead of the scheduled launching of the plan. It is a highly involved, complex and time-taking exercise involving a number of government departments and specialists and technical experts working in semi-government organization as well as in the private sector.

- i. At the very outset the Planning Commission (or its secretariat, the planning and Development Division) invites the provincial governments to formulate their development priorities and major development initiatives that they would like to adopt in their province during the next plan period. This provides time to the provincial government to carry out detailed exercises at their level.
- ii. Simultaneously, the Planning Commission constitutes a large number of technical group in major planning areas of special concern. For example, for the Sixth Five Year Plan technical groups were constituted in the fields of primary education, technical education and higher education in the sector of education and training. These technical groups consist of officials working in concerned federal and provincial departments, qualified personnel working in universities, technical fields, and experts from the private sector. The terms of reference of these technical groups were requested to suggest policies/measures that should be adopted in that sector during the next plan period.
- iii. Concurrently, the various sections of the planning commission carry out detailed analysis of national provincial statistics pertaining to their sector and chalk out a strategy for correcting current imbalances and deficiencies.

- iv. On the receipt of the reports of the technical groups and proposals of the provincial governments and concerned federal ministries a series of meeting are held with concerned departments of the provincial governments and federal ministries, both individually and collectively, to enlarge the area of agreement.
- v. The Planning Commission then prepares a draft plan which is circulated to provincial governments, federal ministries, professional organizations, and the media. A second round of consultations begins to reduce the area of disagreement.
- vi. The draft plan is then considered by the federal cabinet in the light of the summary prepared by the Planning Commission. The summary brings out the point of view of the dissenting provinces/ministries.
- vii. The draft plans as amended by the Federal Cabinet are then submitted to the National Economic Council for final approval. The provinces, being represented in the NEC by Chief-Minister, present their points of view for decision. The plan as approved by the NEC is finally published as the official five year plan.

In the light of the procedure described above, the following generalizations can be made about plan formulation in Pakistan.

- That plan formulation in Pakistan is a centralized activity.
- That the provincial governments are fully involved within the framework of a centralized system.
- That the planning departments at the provincial level are in touch with realities in the ground through consultations with the line departments.
- That elected representatives are involved in the planning process only at ministerial level.

3.3 The Process of Project Planning

Generally speaking projects are prepared and initiated at different levels by relevant executing agencies. Thus the projects to be executed by the provincial governments are generally prepared by the respective provincial departments. Similarly, projects to be implemented within the territorial jurisdiction of the federal government are prepared by the federal ministries concerned. However, projects overrunning provincial boundaries are formulated by the federal government in consultation with the provincial governments. Similarly, foreign-aided projects having provincial components are also formulated and processed at the federal level in consultation with provincial-governments concerned.

The authority to approve projects has been considerably decentralized. At the local level District Councils have been empowered to approve projects relating to their areas provided the cost of the project is within the limit prescribed by the respective provincial government. Projects with higher costs are to be submitted to the provincial department concerned. An authority by the name of departmental development working party (DDWP) has been constituted by the provincial government to consider projects submitted by the district councils and provincial department of education. The DDWP can approve such

projects as are within its financial powers. Projects costing more than their competence are forwarded with recommendation to the provincial planning department board. The planning department concerned places all projects received by it before the Provincial Development Working Party (PDWP) which may also approve such projects as fall within its financial power. Projects costing beyond its cost competence are submitted to the planning commission.

At the federal level, DDWPs have been constituted in respect of which each ministry where all projects pertaining to that ministry are considered. The DDWPs can approve projects falling within their competence and forward others to the planning commission.

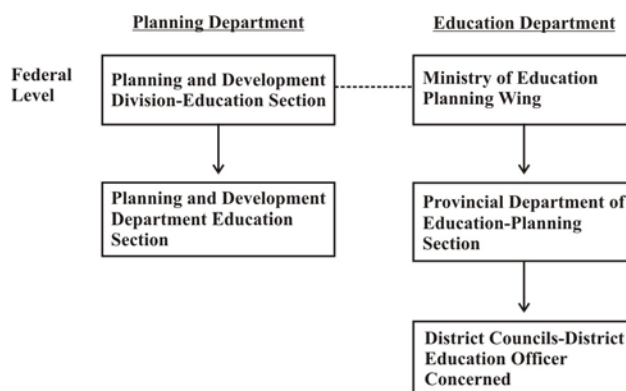
Financial powers of various agencies empowered to approve development projects are given in Annexure II.

At the planning commission there are two bodies which consider and approve projects. All projects are first considered by the Central Development Working Party (CDWP) headed by the Deputy Chairman of the planning commission or the planning secretary. The heads of the provincial planning department board are members of the CDWP. Ministries of Finance and Economic affairs also represented on the CDWP. The CDWP approve projects within its cost competence and forwards others to the Executive Committee of the National Economic Council (ECNEC) headed by the Finance Minister. Other members of the ECNEC include Federal Ministers of Economic Ministries nominated by the Prime-Minister and Finance Ministers of provincial governments.

3.4 The Administrative Machinery for Educational Planning

The long term objectives are set by the education policies of the Federal Government, announced from time to time. The policies formulated in the Ministry of Education in collaboration with the Planning division and provincial departments of Education and Planning determine the overall direction for educational development. Under the overall objectives set by the education policy, different branches of the Ministry of Education and the provincial departments of education prepare projects and process as outlined in para 4.3. The process of educational planning and the administrative machinery involved is illustrated in the chart below.

Chart-1 Administrative Machinery for Planning



3.5 Allocation of Development Funds

At this stage it would be appropriate to briefly describe the procedure for the allocation of funds for development schemes. The five year plan indicates the total outlay for different sectoral programmes. The annual phasing of this outlay and its break up into major programmes are also given in the plan. However, actual allocation of funds is made annually during the preparation of the annual budget. The planning and development division has the overall responsibility of coordinating the process of allocation of development funds. A document entitled Annual Development Programme or Public Sector Development Programme, published by it, lists the projects to be funded during the year.

The primary responsibility for making funds available is that of the Ministry of Finance. The Ministry of Finance estimates the total receipts likely to be collected during the next fiscal year from various sources-internal as well as external. After deducting the amount required for non-development purposes namely repayment of loans and interests (known as debt servicing), defense requirements and funds required for running the affairs of the federation (Presidency, Prime-Minister's house, Parliament and salary of officers and staff) and the share of the Provinces in the total divisible pool, the amount likely to be available for development purposes is arrived at. The amount available for development is then divided among the provinces and the federation.

The Economic affairs Division secures and monitors disbursement of loans and aids for development projects from various governmental agencies, international development banks and UN agencies.

The preparation of the Public Sector Development Programme starts about six month before the beginning of the fiscal year. All ministries divisions are requested to forward their requests for funds for various projects to the Planning and Development Divisions. The recommendations of the Planning and Development Division for allocation of funds for various projects are discussed at the meetings of the priority committee headed by an Additional Secretary of the Ministry of Finance at which the Economic Affairs Division, the Planning and Development Division and the ministry concerned are represented. At these, meetings the request of the ministry concerned for funds for each project is considered in the light of the priority for the project, its progress so far and availability of aid, if any. The funds recommended by the Priority Committee are further discussed at the level of Secretaries at the meeting of the Annual Plan Coordination Committee chaired by the Finance Minister. The provincial governments are represented at this meeting by the Additional Chief Secretary. If any differences still remain unresolved these are presented to the Federal Cabinet at the time of approval of the budget. The Provincial Chief Minister and Planning Ministers are invited at the meeting.

The allocation of funds of the development projects to be financed under the Provincial Public Sector Development Programme is made through a process similar to that described above.

Thus the process of planning in Pakistan is a highly complex one involving coordination between the federal government and the provincial governments on the one hand and between a numbers of Federal Ministries on the other. To facilitate cooperation between various concerned departments to provide opportunities for resolving differences a number of forums have been created at various levels at which all parties are represented. At the apex are the National Economic Council (NEC) and the cabinet headed by the Prime Minister.

4. MAJOR ACTIVITIES PERFORMED AT DIFFERNT STAGES OF PLANNING

The following are some of the major activities performed at different stages of planning.

Stage-I Pre-planning

- Establishing Planning Organization and Structure.
- Creation of information/data network.
- Defining objectives for various levels (National, Regional, Provincial).

Stage-II Planning

- Discrepancy analysis/matching actual output of the system with desired objectives both qualitatively and quantitatively and finding deviations.
- Stipulating policies to remove deviations.
- Estimating resource needs and availability.
- Establishing priorities to suit resource position.
- Establishing alternate approaches.
- Feasibility testing of some key areas.

Stage-III Plan Formulation & Detailing

- Establish broad parameters of the plan to achieve objectives (what, when, why?)
- Programming (breaking plan into broad action area).
- Projects identification and formulation grouping of activities to suit unit of implementation details of agency, costs, time schedules, finances, manpower needs.
- Spatial distribution.

Stage-IV Implementation, Monitoring & Feedback

- Defining administrative frame work and procedures.
- Defining allocation of task/duties.
- Establishing communication channels.
- Acquisition of resources.
- Actual implementation/exaction.
- Establishing control points for monitoring.
- Finding deviations during implementation and taking corrective actions.

Stage-V Evaluation

- Establishing criteria for end-of-the project evaluation and time frame.
- Designing instruments and methodologies for evaluation.
- Identifying discrepancies between actual performance and expected performance.
- Providing basis for corrective measures and re-planning in next cycle.

5. FINANCIAL POWERS OF VARIOUS BODIES EMPOWERED TO APPROVE DEVELOPMENT SCHEMES

The National Economic Council has approved the following sanctioning powers of various authorities for the implementation of the Seventh Five Year Plan period (1988–93):

- | | | |
|----|---|--|
| 1. | Federal Ministries through the departmental working party. | Rs.20.00 million (Non-Recurring) |
| 2. | Central Development Working Party | Federal schemes between Rs.20.00 million and Rs. 60.00 million (Non-recurring) |
| 3. | ECNEC | All schemes costing above Rs. 60.00 million (Non-Recurring). Provincial as well as Federal. |
| 4. | Provincial Governments through the Provincial Development Working Parties. | All schemes costing upto and including Rs.60.00 million (Non-Recurring) |
| 5. | Northern Areas Development Working Party Islamabad
Development Working Party
FATA/DC. | All scheme costing below Rs.20.00 million (Non-Recurring) and or Rs.4.00 million (Recurring) |
| 6. | Northern Area Council Azad Government of the state of Jammu and Kashmir
Governor NWFP in respect of FATA | All schemes costing upto and including Rs.60.00 million (Non-Recurring). |

The sanctioning powers of the authorities except the VDWP and ECNEC are subject to the following conditions:

- (a) The authority must set up a proper planning and monitoring unit and a Development Working Party on which the Ministry of Finance be represented.
- (b) If the Ministry of Finance does not agree with the decision of the Development Working Party the scheme shall be submitted to the CDWP ECNEC.
- (c) Copies of all schemes on the agenda shall be supplied to the Planning and Development Division at least ten days before the meeting. The Planning and Development Division shall have a right to attend the meeting of the Development Working Party and express their views on the PC-I.
- (d) A copy of the scheme finally approved by the Development Working Party will be promptly furnished to the Planning and Development Division and the Ministry of Finance (Development Wing).

The Provincial Government in turn delegates some of their powers to other agencies. For example, the Government of Punjab has delegated powers as under:

- i) Departmental Department working Parties of various Provincial departments headed by the Provincial Secretary can approve projects costing upto Rs.6.000 million (Non-Recurring).
- ii) Divisional Department Working Parties headed by the Divisional Commissioners can approve schemes costing upto Rs.3.500 million. The Divisional DWPs can only approve schemes relating to school education only. A Director, Planning has been nominated by the Punjab Development Board to assist each Divisional DEP.
- iii) Zila Council headed by the Chairman can approve schemes costing upto Rs. 1.500 million. The Provincial Development Board has placed the services of a Deputy Director Planning at each Zila Council.

Other Provincial Government has similarly delegated financial powers to approve development schemes in accordance with their local conditions.

6. CONCLUSION

Let us say few words when concluding the discussion on the unit that the preparation of the plan document provides the occasion for making an overall review of the strengths and weaknesses of the national life. Everything affecting the health of national economy comes up for a thorough and close examination at the time of the formulation of a development plan. The purpose of this exercise is to evolve policy options for overcoming imbalances and bottlenecks so that resources could be utilized fully and the people at large may avail better opportunities of life. The plan provides benchmarks (targets) in quantitative terms. This enables an assessment of the performance during the plan period. The targets give relief to the shortcomings of the system and help to determine the priorities.

Another benefit to formulate and implement different kinds of plan is that the gap between the aspirations and what could possibly be achieved under the given constraints become obvious. It is clear that the plan document contains policy recommendation designed to correct structural and qualitative imbalances.

Generally speaking documents like plans must be regarded as made for men, men are not made to be subservient to plans. A plan will only be followed so long as it serves the interest of those who direct national affairs. This is a powerful argument for trying not to predetermine future action too specifically or too far ahead, and for leaving as much flexibility as possible.

7. SELF-ASSESSMENT EXERCISE No. 2

1. Represent six Stages of planning figure and describe them briefly.
2. Why diagnosis in planning. Give its characteristics in relation to relevance, effectiveness and efficiency in education system.
3. Explain the types of planning with some examples in Pakistan.
4. Elaborate the constitutional position of planning in Pakistan.
5. Elaborate the formation of administrative machinery for educational planning in Pakistan.
6. Analyse the activities performed at various stages of planning.
7. Enumerate the financial powers of various bodies to approve development schemes in Pakistan.

8. KEY TO EXERCISE No. 1

a)	4	b)	10	c)	2	d)	4
e)	7	f)	6	g)	1)	h)	5
i)	3	j)	3	k)	11	l)	3

Key to Exercise No. 2

Q. 1	Please consult	Para-2
Q. 2	Please consult	Para-2.2
Q. 3	Please consult	Para-3, 3.1 - 3.5
Q. 4	Please consult	Para-4
Q. 5	Please consult	Para-4.4
Q. 6	Please consult	Para-5
Q. 7	Please consult	Para-6

Unit–3

EDUCATIONAL PLANNING PROCESS: (Objectives and Constraints)

Revised by:

Dr. Shaukat Ali Siddiqui

Reviewed by:

Dr. Syed Manzoor Hussain Shah

CONTENTS

S.No	Description	Page No.
	Introduction.....	41
	Objectives.....	41
1.	Why Educational Planning?.....	42
1.1	Changed Role of Government	42
1.2	Involvement of Aid Giving Agencies in National Development.....	42
1.3	Need to Maximize Benefits from Scarce Resources.	42
1.4	Meeting Increased Demand for Education.	42
1.5	Education as a Tool of Social Planning	42
1.6	Planning for Higher Resource Allocation.....	42
2.	Objectives and Constraints in Planning.....	43
3.	Objectives and Constraints as Determinants of Scope and Direction of Planning	45
4.	Objectives and Constraints in Educational Planning.	47
5.	Education Policy and Educational Planning.....	50
6.	Constraints Affecting Formulation of Objectives.....	53
7.	Constraints Affecting the Accomplishment of Objectives of Educational Development.	54
8.	Conclusion.....	55
9.	Bibliography	56
10.	Self-Assessment Exercise 1.....	56

INTRODUCTION

The term planning is used in so many ways that there is often confusion about what people actually mean when they take about planning or when they use words such as plans and planners.

Despite the surfeit of existing definitions some sort of working definition of planning can be defined by Dror,

“a continuous process which involves decisions or choices, about alternative ways of using available resources, with the aim of achieving particular goals at some time in the future”.

President Nyrere of Tanzania introduced this definition of planning in a speech to launch his country’s second five year plan and in so doing he expressed that Planning involves making decisions about which of a number of courses of action to adopt in other words, making choices. He said that planning “means choosing between many desirable activities because not everything can be done at once”. (Nyrere, 1969)

Planning involves not only deciding what should be done to achieve a particular goal but also deciding the sequence in which the various activities should be performed in order to proceed in a logical and orderly manner step by step towards the achievement of the goal.

OBJECTIVES

After reading this unit the students will be able to:

- analyse the need of educational planning.
- enumerate the objectives and constraints in planning.
- identify the principles of action in dealing with objectives and constraints.
- determine the role which an educational planner has to play in relation to constraints.

1. WHY EDUCATIONAL PLANNING

Today there is hardly a developing country in the world which has not adopted educational planning as its strategy for development why there is a sudden change in the minds of the people to adopt planning. Let us identify some major reasons.

1.1 Changed Role of Governments

First the role of Governments has been changed in recent years. The governments are no longer expected only to defend national territories, maintain law and order and provide other essential services. They are now responsible to promote economic growth and social welfare. Unemployment, poverty, inflation are regarded no longer an inevitable troubles. The governments are required to do something about them. This calls for coordination of and planning efforts in different sectors of economy.

1.2 Involvement of Aid Giving Agencies in National Development

The trend towards overall development planning, including the planning of education has been reinforced by the policies of aid giving agencies, national and international. It must be acknowledged that agencies like UNDP, the World Bank, the Asian Development Bank UNESCO, IIEP have contributed towards the development of educational planning and the establishment of educational planning institutes in several countries.

1.3 Need to Maximize Benefits from Scarce Resources

Scarcity of resources has compelled economists to insist that the criteria of productivity and efficiency be applied to investment in every sector of the economy. This has impelled educationists to acquire competencies in the use of techniques of economic analysis such as cost-benefit analysis.

1.4 Meeting Increased Demand for Education

The unprecedented growth in the demand for education has necessitated. The unprecedented growth in the demand for education has necessitated forward to avert crisis situation. For the provision of adequate physical facilities and teachers the ministries of education and finance have realized the need of planning.

1.5 Education as a Tool of Social Planning

Education has become ever more important to the individual in modernizing societies. Increasingly the status, job and income of people depend on their education. Educational labels in form of certificates diplomas and degrees are determining access to jobs. Education has become a means of ensuring a more equitable income distribution, increased emphasis on educational planning reflects a response to heightened public demand for education and to public concern with educational policy.

1.6 Planning for Higher Resource Allocations

One of the main challenges in future is to encourage educationists to acquire the techniques of planning so as to be able to defend investment in education in terminology of the economists. The acquisition of these skills would enable educational administrators to present their case in the language understood by the economists for greater allocation of resources in the interest of accelerated economic development.

2. OBJECTIVES AND CONSTRAINTS IN PLANNING

2.1 The two factors with which, the educational planner is most concerned with our objectives and constraints. In dealing with constraints the planner has to be forward-looking, innovative and pioneering because:

- i) Objectives and constraints provide the challenge for the educational planner's work. They tax his ingenuity and his capacity to achieve predetermined results in the face of difficulties, and
- ii) they also determine the direction and scope of his work. Objectives as intentions are constantly circumscribed by constraints which represent realities of the situation. How far one wants to go and how far one can actually go both separately and jointly set limits to how far one really goes. They would similarly determine the direction in which one goes on the easy path of least resistance or on a more difficult path overcoming obstacles and barriers.

A detailed discussion on these two important elements is desirable as the educational planner's position relating to them has to be clearly defined and understood at the very outset.

2.2 Objectives and constraints place before the planner a wide range of choices. Let us elaborate this point through a simple analogy which could be illustrated. The planner of a railway line to connect one city with another has an objective assigned to him that is to connect the centre of the first city with the centre of the second city. To accomplish this objective, he has to overcome a formidable list of constraints such as the following:-

- a. natural resources availability of vacant land in the centre of the two cities for stations, availability of vacant land for the railway within and between the cities
- b. human resources supply of personnel with requisite technical skills and experience and managerial capacity
- c. material resources availability of equipment, machines and supplies in requisite quantities at the time and place they are needed
- d. financial resources supply of adequate funds to purchase the goods and services as and when needed
- e. natural barriers a steep range of mountains between the cities and a broad river virtually encircling the second city.

2.3 What are the choices before the planner of this railway line? Let us consider only a few illustrative choices:-

- i) Assuming that vacant land cannot be obtained for stations in the centre of the cities, he could:
 - a. vary the objective and locate the stations at the periphery of the cities;
 - b. acquire and demolish buildings in a least developed spot in each city;
 - c. dig up the central plaza in each city and construct underground stations.

- ii) Assuming that vacant land is non-available for the line within the cities, he could:
 - a. locate the stations outside;
 - b. run an underground line from the centre of each city to the periphery;
 - c. acquire and demolish buildings on the way.
- iii) To cross the range of mountains, he could
 - a. take a winding line up through the passes (distance would nearly be doubled);
 - b. reduce the length of the line by constructing a series of short tunnels;
 - c. construct a long tunnel almost as the crow flies between the cities.
- iv) To cope with the river around the city, he could
 - a. locate the station on the nearer bank of the river and avoid crossing it;
 - b. construct a bridge;
 - c. construct a tunnel.

2.4 Straightway one important observation could be made on the nature of the choices. Some of them are in the nature of modifications of the objective itself. Instead of achieving the objective exactly in the manner it is formulated, choices of the best possible approximations are contemplated. One could start with the firm promise that the objective would not be tempered with in any way. If that be the case, all choices modifying it would cease to be available. But is that a realistic approach?

2.5 Choices cease to exist as they are evaluated and found impracticable in the face of relevant constraints. Continuing our analogy, a constraint like the unsuitability of the soil for underground constructions or the lack of technical capacity to undertake such constructions, would immediately remove all the choices relating to underground stations, railway lines and tunnels. Lack of funds to acquire built property in cities or stiff opposition from their owners could similarly eliminate the choices relating to acquisition of land for stations and railway lines in the cities. The high cost of steel and cement could render the construction of the bridge impracticable.

2.6 The challenge to the planner is that he is neither daunted nor discouraged by the reduction of his choices. The last thing our planner of the railway line is expected to do is to run away from his assigned task on the ground that constraints are overwhelming. In the first place, a planner is called in because constraints are always overwhelming. If there were not so many constraints resulting in so many choices to be evaluated, the railway authorities would simply get the skilled labourers to lay the line.

3. OBJECTIVES AND CONSTRAINTS AS DETERMINANTS OF SCOPE AND DIRECTION OF PLANNING

3.1 While the objectives dictate where one should ultimately go, the constraints determine how and how far and in how long a time one could go there. Universal primary education has been a goal cherished by all education policies and educational development plans. The fact that we are nowhere near universalization of primary education. It suggests that there must be serious constraints in the way of attaining this objectives.

3.2 Some idea of the constraints and the magnitude of the problem can be had from the results of a study conducted by the National Education Council in 1986. The study estimates that if the minimum age of admission is raised from 5 to 6 years, universalization of primary education could be attained by 1991 if:

- (a) 52,000 new primary schools are opened between 1992 to 2002 at an estimated cost of Rs. 8650 million
- (b) 103,759 additional primary school teachers are appointed during this period;
- (c) an additional expenditure of Rs. 3500 million is made on teacher salaries during this period.

This an additional expenditure of Rs. 7500 million is required on construction of primary school buildings and salary of teachers alone. The cost of administrative structure required for handling such a programme and the cost of training of teachers would be in addition of the above estimate.

3.3 In some of our communities there is a strong feeling against sending girls to schools particularly boys schools or schools with male teachers. In some provinces the population is dispersed in a large number small pockets of hutments separated from one another by vast unpopulated areas. There is also a small nomadic population which keeps descending from the mountains during the winters and keeps climbing back during the summers. Bringing girls and children from these communities into schools would be a challenge to the ingenuity of the educational planners.

3.4 No constraint is permanent or everlasting. This is a very important fact to be remembered by a planner. Whether a constraint is man-made or natural, it does not remain a constraint forever. Funds and personnel not available now would be available at a later time. Natural barriers now insurmountable will be overcome in the future with the development of technology. Resistances of today may cease tomorrow. Even value systems restraining a particular kind of action now would change over years. What does this imply in relation to the direction and scope of planning?

3.5 The nature of objectives and constraints, as we have so far enunciated, suggests a number of significant principles which a planner would adopt to his advantage. They are:-

- i) The planner should focus his attention on long-range objectives to determine the final goal of his efforts. These must be clearly defined on the premise that all existing

constraints are only temporary.

- ii) The comparison of long-range objectives against the current constraints in time, resources or socio-cultural barriers should not result in the wholesale rejection of long-range objectives. They would still be achievable at a later date with planned action to overcome the constraints.
- iii) When long-range objectives cannot be immediately achieved due to existing constraints, two courses of action must be initiated:-
First:- A set of immediate or intermediate objectives achievable within the constraints should be formulated.
Second:- Action to overcome the constraints must be planned and put into operation simultaneously with action to accomplish immediate or intermediate objectives.

3.6 The persistence with which the five-year plans of the country have projected universal primary education as the objective of all development efforts should be viewed in the context of (i) above. Having stated that, "Serious efforts will be made to institute universal education by ensuring that all boys and girls of the relevant age group get enrolled in class-I latest by the terminal year of the plan", the *Sixth Five-Year Plan 1983-88* formulated the immediate objective for the Plan which was "to increase from 48 per cent in 1982-83 to 75 per cent in 1987-88". Similarly, the Sixth Plan also proposed action to overcome the constraints affecting the attainment of universal primary education. The Plan stated that; among the major obstacles is the indifference of communities and parents to education in general and that for girls in particular.

Community pressures will have to be developed and brought to bear on families to overcome these constraints.

Another problem pertains to the scatter pattern of population in large parts of the country. It is estimated that at least 20 per cent of population in rural areas live in settlement of less than 300 persons. Under these circumstances, the provision of a school building becomes an expensive proposition. The problem become unmanageable if separate schools are to be provided for boys and girls. It will be necessary to revise special programmes such as mosque schools, or mobile schools, with lowered qualification for teachers.

- i) In planning action to accomplish immediate or intermediate objectives, are must be taken to avoid:-
 - a. rigidity in organization and procedures which would hamper the eventual accomplishment of long rang objectives; and
 - b. investments in buildings and facilities which are not flexible and adaptable as required ultimately when the long-range objective is put into operation.
- ii) The planner's attitude towards constraints should be that:-
 - a. they are challenges to be faced;
 - b. setbacks, both temporary and long-term, have to be anticipated and provided for in "contingency" plans; and
 - c. one should not hesitate to "take one step backward to take two. Steps forward."

4. OBJECTIVES AND CONSTRAINTS IN EDUCATIONAL PLANNING

4.1 The principles, discussed above, apply with equal validity to educational development. With that in mind, we shall examine a few issues specific to objectives and constraints relevant to education. As regards objectives, one may raise the following questions:-

- Is there a distinction between educational objectives and objectives of educational development?
- Who sets these objectives?
- With what objectives is the educational planner primarily concerned?

4.2 It is observed that educational planners and administrators do make a definite, even if subtle, distinction between educational objectives and objectives of educational development. By educational objectives is meant a set of perennial aims of education such as:-

- a. the physical, mental and emotional adjustment of the individual to the social unit in which he is brought up;
- b. the economic viability of the individual and the social unit; and
- c. the preservation of the cultural identity of the social unit.

4.3 These may be elaborated with varying degrees of emphasis on certain specific aspects. For example, some would lay stress more on the physical, mental and emotional development and well being of the individual than on his obligations vis-a-vis society.

4.4 As different from such self-evolved and widely applicable educational objectives, there are objectives which are formulated from time to time, usually by policymaking authorities of government, as applicable to a particular plan of educational development. Here are a few lists of objectives from recent education plans of four Asian countries. These are objectives of educational development, formulated for a specific country to reflect specific national requirements. These are in fact called the national educational objectives.

(i) Malaysia (Second Malaysia Plan)

- a. consolidation of the education system to promote national integration and unity;
- b. Orientation and expansion of education and training programmes towards meeting the manpower needs of the country;
- c. improvement of the quality of education for the building of progressive society oriented towards modern science and technology; and
- d. improvement of the research, planning and implementation capability to meet the above objectives.

(ii) Sri Lanka (Medium-term Education Plan (1973-1977))

- a. Working towards a better 'fit' between the education system and the needs of the country at all levels of education and in both general and technical education. By getting the structure and content of education to sponsor those outcomes of education needs for accelerated growth of the country's economy. This has to be done without violating the broader objectives of education.
- b. Achieving greater internal quality and effectiveness within the education

system by:-

- i) reducing repetitions and drop-out while maintaining educational standards;
 - ii) upgrading the skills of the personnel engaged in education by having more and better teacher training, both pre-service and in-service, and also by organizing training programmes to meet the needs of the administrative and management personnel; and
 - iii) consolidating the extending quality improvement work of the last 10 years in respect of curriculum development, examination reform, etc.
- c. Furthering the equality of access to education:-
- i) by reducing area-wise imbalances in the provision of education facilities; and
 - ii) by effecting changes in the structure of the school system with a view to removing the disabilities suffered by some pupils.

(iii) Philippines (Ten Year Plan 1976-85)

- a. Provide all citizens with broad general education;
- b. Develop the nation's manpower in the middle level skills necessary in the socio-economic development of the country;
- c. Develop high-level professionals in the areas where they are needed.
- d. Promote desirable cultural values; and
- e. Respond to changing needs and conditions through a system of planning and evaluation.

8th Five Years Plan of Pakistan

Plan Objectives

The overall objectives of the eighth plan, remain, as in the past to enhance substantially the economic and social well being of the people as envisioned in the idea of an Islamic Welfare State. This would be done in a sustainable manner that does not jeopardise the long term growth potential of the economy. The long term perspective implies the inclusion of environmental concerns as well as those of social and economic justice directly into the plan objectives. Finally, the process of economic growth has to be accompanied by one of institutional development and institutional reform so that there is a match between the public and private sectors of the society, and that the benefits of growth are not undone by the inability of the public sector to provide services and functions that cannot be supplied by the market. This translates into five major objectives:

- Economic: Raising per capita incomes by increasing the rate of economic growth above its historical average of 6 percent per annum, while maintaining macroeconomic stability.
- Justice: Social and economic justice in the form of alleviation of poverty, improvements in human resource development (particularly in access to social services of adequate quality), generation of employment opportunities, ending discrimination against women and vulnerable groups, encouraging broader participation of all people in the development process, and establishing a rule of law.

- Conservation: maintaining a proper balance between the natural resource base and the volume and nature of human activity, by taking steps to reduce population growth, introducing policies and establishing institutions that will make industrial and economic growth consistent with resource conservation, and redressing the ill effects of past neglect.
- Governance: Improving the efficiency and accountability of public institutions through decentralization, devolution of powers, and the establishment of systems of monitoring; improving the system of collection, dissemination and management of information; strengthening and supporting lower level executive and judicial institutions; involving the mass media in mass awareness programmes to strengthen public functions; improving and streamlining the incentives available to public functionaries.
- Strategic: Ensuring the security of the citizens. This includes in particular the objective of self reliance in strategic areas, such as food security, energy, defence production and public finance.

Plan Strategy

The emerging shift can be described as one from direct control to that of partnership. The shift towards a regime of partnership between the government and the private sector is the basis of recent structural reforms of privatization, deregulation and liberalization. However, these reforms also need to be buttressed by investment in institutional strengthening. This is the case encourage effective financial intermediation without creating the risk of fraud or mismanagement for individual depositors or that of economic instability for the economy. Second, is the effective monitoring of the environmental costs of economic actions. Third, and most importantly, private sector institutions work best only where the enforcement of contracts is underlain by reliable, effective and speedy judicial institutions at the lowest level.

The need for a second form of partnership, between government and local communities, has been recognized in the wide public support for community development initiatives led mainly by NGOs. Community organization is also a central recommendation of both the National Conservation Strategy (NCS) and the Social Action Programmes (SAP).

A third form of partnership, between the government and public at large, is envisaged in various public awareness campaigns on the issues of environmental conservation, afforestation, pollution, smoking, narcotic use, and energy conservation. This also involves a partnership between the government and the mass media. Finally, there is a new sense of partnership within the government itself. It is now recognized that no target can be achieved by a single ministry, agency or tier of government. In virtually every case is a need for partnership and cooperation between various agencies. In some cases, as the basis for more effective cooperation between the federation and the provinces, the requirement was the resolution of long standing disputes through the awards of the National Finance Commission and the Indus Waters Commission. These can enable each institution to attend to its obligations more assiduously.

In a few other cases a similar dispensation would be needed to clarify the spheres of responsibility of individual units. Examples include the division of powers, responsibilities and financial resources to local governments. In other cases, what is needed is the establishment of coordinating and monitoring institutions; these can ensure the proper fulfillment of contributing targets by individual agencies. For example, given that the objectives of the national conservation strategy can only be achieved through a sustained cooperation between various agencies of the government, as well as between the government and NGOs and private sector organizations, the immediate goal is to establish institutions that can facilitate cooperation between these.

In both these cases, however, the structural reform of individual government institutions would become necessary. This would include attention to training, supervisory systems, management information systems, and appropriate incentives.

With this background, we turn to the specific features of the eighth plan. As in the past, the centerpiece of the plan is a public sector development programme. In addition, this time, there is an outlining of an agenda of policy reform, institutional reform, the establishment of legal and regulatory base, and the development and strengthening of the information base for public functionaries, whether inside or outside the government.

5. EDUCATION POLICY AND EDUCATIONAL PLANNING

5.1 We noted that educational objectives are usually framed by the educational policy making authority of the country. It is undoubtedly a political function. The educational planner still has a role to play. The minimum is to ensure that the objectives are formulated or revised in time for the planning or the re-planning exercise. But the more appropriate role would be to be involved in the process of preparing the draft objectives. In some countries the initial draft actually originates in the educational considerations. Moreover, their interpretation in the preparation of the plan becomes more reliable.

5.2 National Education Policy 2009

Aims and Objectives

1. To revitalize the existing education system with a view to cater to social, political and spiritual needs of individuals and society.
2. To play a fundamental role in the preservation of the ideals, which lead to the creation of Pakistan and strengthen the concept of the basic ideology within the Islamic ethos enshrined in the 1973 Constitution of Islamic Republic of Pakistan.
3. To create a sense of unity and nationhood and promote the desire to create welfare State for the people of Pakistan.
4. To promote national cohesion by respecting each other's faith and religion and cultural and ethnic diversity.
5. To promote social and cultural harmony through the conscious use of the educational process.

6. To provide and ensure equal educational opportunities to all the citizens of Pakistan and to provide minorities with adequate facilities for their cultural and religious development, enabling them to participate effectively in the overall national effort.
7. To develop a self reliant individual, capable of analytical and original thinking, a responsible member of society and a global citizen.
8. To aim at nurturing the total personality of the individual, dynamic, creative and capable of facing the truth as it emerges from the objective study of reality.
9. To raise individuals committed to democratic and moral values, aware of fundamental human rights, open to new ideas, having a sense of personal responsibility and participation in the productive activities in the society for the common good.
10. To revive confidence in public sector education system by raising the quality of education provided in government owned institutions through setting standards for educational inputs, processes and outputs and institutionalizing the process of monitoring and evaluation from the lowest to the highest levels.
11. To improve service delivery through political commitment and strengthening education governance and management.
12. To develop a whole of sector view through development of a policy and planning process that captures the linkages across various sub sectors of the education system.
13. To enable Pakistan to fulfill its commitments to achieve Dakar Framework of Action EFA Goals and Millennium Development Goals relating to education.
14. To widen access to education for all and to improve the quality of education, particularly in its dimension of being relevant to the needs of the economy.
15. To equalize access to education through provision of special facilities for girls and boys alike, under-privileged/marginalized groups and handicapped children and adults.
16. To eradicate illiteracy within the shortest possible time through universalizing of quality elementary education coupled with institutionalized adult literacy programmes.
17. To enable an individual to earn honestly his/her livelihood through skills that contributes to the national economy and enables them to make informed choices in life.
18. To lay emphasis on diversification from general to tertiary education so as to transform the education system from supply-oriented to demand-oriented and preparing the students for the world of work.
19. To encourage research in higher education institutions that will contribute to accelerated economic growth of the country.
20. To organize a national process for educational development that will reduce disparities across provinces and areas and support coordination and sharing of experiences.

This provides an overall guideline for the future courses of action. In order to implement it we will need to break it down into sub-objectives which will lead us to the formulation of educational plans. First of all, we shall have to identify the areas and the section of population for whom the education is not accessible. At the next step, we shall

prepare a plan, based on our finding. The sub-objectives may run as under:-

- i) To open more schools in deprived localities;
- ii) To provide incentives for the wards of unprivileged areas and localities in the institution of higher education, etc.

5.4 Let us take another example from the Malaysian list. Take objective No.1. It reads as follows: -

“Consolidation of the education system to promote national integration and unity”.

It has to be more detailed for future action to be planned. So the authorities have developed it into a set of programme oriented sub-objectives in the following manner:-

- i) the implementation, in stages, of Bahasa Malaysia as the main medium of instruction in school;
- ii) closing the gap in educational opportunities among regions and races; and
- iii) the eventual integration of the education systems of the East Malaysian States with the national system.

5.5 Let us take another example from the Ten Year Plan of the Philippines. Here the objective No.3 (i.e. to develop high level professionals in the areas where they are needed) is elaborated into what are called in that document the specific objectives: -

- i) To further strengthen and develop higher education in the disciplines needed in the country's economy;
- ii) To provide the mechanism towards a greater coordination between government and private higher institutions;
- iii) To democratize access to education;
- iv) To develop financing schemes to aid private education institutions to enable them to relate their programmes to socio-economic development of the country;
- v) To improve physical plant and facilities to provide better learning conditions and to enhance socializing values;
- vi) To upgrade the competencies of instructors/professors in higher education.

Just as there are different ways of formulating objectives, their elaboration also can vary from country to country or even organization to organization. There is no right way. The only criterion of adequacy is that the formulation and the elaboration provide a clear and unambiguous direction to be followed in the planning exercise.

6. CONSTRAINTS AFFECTING FORMULATION OF OBJECTIVES

6.1 Constraints affecting educational development are of different types. Some of the major constraints such as political and economic ideologies would have already exerted their impact on the form and content of the objectives. The manner in which the objectives are formulated and promulgated would also reflect such ideological constraints.

6.2 Other kinds of constraints, which would influence the formulation of objectives, include:-

- a. Socio-cultural constraints when the prevalent social value system determines the overall priorities in educational development. The unwillingness of rural parents in Pakistan to send their girls to schools particularly to boys schools is a constraint against universalization of primary education. Similarly, the custom of early marriage of girls is a constraint against education of rural and sub-urban girls beyond primary and middle.
- b. Educational and administrative ethos of the country where certain patterns and practices in education and administration are assumed to remain unchanged in the foreseeable future. The practice of requiring the community to provide some structure if it wants a primary school to be opened in its area by the government has been a serious constraint particularly in small settlements dispersed over a vast area. The continued adoption by the administration of dual standards of specification for rural and urban schools is another serious constraint against the development of a truly national system of education in the country.

6.3 These are constraints which have begun to affect educational development even therefore the educational planner enters the scene officially. So what can he do about them? There are several points of views expressed on the position of the educational planner and administrator in relation to such constraints. For example:-

- a. Some say: "He should work within the existing socio-political system with all its limitations. The task of reforming them belongs to others and particularly to politicians and social reformers".
- b. Another group says: "He may have no alternative but to work within the political system represented by the government as long as he is a government servant. But he should be alive to the changes which are demanded in socio-cultural value systems, as well as educational and administrative patterns and practices. He should look for opportunities to support reforms in them, even if he does not actually initiate them".
- c. Yet another group says: "When the educational planner sees in those constraints elements which hamper educational development, he should be bold enough to say it where it matters and use his professional knowledge and skills to minimize their impact on objectives and policies. His commitment to educational development should be paramount. He should actively fight every impediment affecting it".

6.4 Which of them is valid or acceptable in a given situation? Much depends on the professional status, the personality and the intellectual caliber of the particular educational

planner or administrator. Some could exercise greater influence than others. But all can do at least one thing: identify elements in such constraints which can be modified or eliminated gradually without drastic or radical changes and initiate action towards their modification and elimination. The action suggested here could range from making proposals to appropriate authorities for changes in existing structures, procedures and attitudes to undertaking (and playing a leading role in) activities of Public information. Public information activities have a particular reference when social and cultural attitudes impinge on educational development.

7. CONSTRAINTS EFFECTING THE ACCOMPLISHMENT OF OBJECTIVES OF EDUCATIONAL DEVELOPMENT

7.1 In this category of constraints we would once again find all those affecting the formulation of objectives. In addition the following are more frequently mentioned:

1.	Time		Time taken in preparing, approving and implementing projects
2.	Resources	Financial	Low budgetary allocation
		Human	Lack of education and technical training
		Technical	Lack of technical know-how, out-dated technology
		Natural	Lack of mineral resources, shortage of water, climate, land
		Material	Cement, steel
3.	Operational Barriers	Legal	Legal procedures required e.g. in acquisition of land termination of service
		Organizational	Hierarchy in decision-making
		Procedural	For example, in hiring people or getting funds released
		Informational	Non-availability of statistical data; knowledge of procedures
		Methodological	Account keeping; administration
4.	Absorption Capacity	Inadequate infrastructure caliber and number of personnel, etc.	Dearth of technically trained personnel at all levels capacity to prepare and implement projects limited; need for special cells.
5.	Resistance to Change	Attitudes	Unwillingness to decentralize; reluctance to send girls to boys primary schools; insistence on external examination.

As regards constraints which affect the accomplishment of already formulated objectives of educational development, the role of the educational planner or administrator

should be clearer.

7.2 As planning is the preparation of decisions for action in the future, the identification of steps to deal with impediments to such action is also a part of the planning exercise. Let us recall the analogy which we considered at the beginning of this unit. As all constraints are eventually surmountable, the educational planner has to make choices. One of the choices would be to extend the time target action one or more intermediate objectives leading in stages to the final objective.

Example:

As objective given to a certain planner is to achieve universal primary education of eight years within the plan period. Analysis of resources, operational barriers and so forth shows that such an objectives could not be achieved during the given period. The planner has no alternative but to evolve intermediate targets in relation to either.

- number of years of universal primary education, or
 - the percentage of population covered.
- when these intermediate objectives are progressively achieved, they contribute towards the eventual fulfillment of the overall objectives of universal education.

7.3 The educational planner is actually provided with an opportunity to set such intermediate objectives, at the stage of setting targets. This is an appropriate point to deal with constraints. But a caution has to be sounded. In target-setting, the tendency is normally to submit to the ever overwhelming oppression of the constraints. One almost says: “This is the best we can do under the circumstances. Do not expect any more”. The educational planner has to be careful not to adopt such an attitude of resignation. It would be appropriate to go back to the five principles we evolved in Para 4.5. Particular reference should be made to the third principle. According to it, the target setting (formulating immediate or intermediate objectives) must be accompanied by planned action to overcome constraints which restrict targets. The importance of such an approach in planning the educational development of a country is indeed paramount.

8. CONCLUSION

This discussion of objectives and constraints in educational planning has shown that the educational planner has a number, of significant responsibilities in the formulation of objectives, the analysis of constraints and in coping with the constraints to achieve specified objectives. His involvement in the formulation of objectives has the advantage of making them more realistic and professionally feasible. It would eliminate the need to develop practicable intermediate objectives for purposes of planned action. As regards constraints, the educational planner’s role is a wide one. Regarding each constraints as a challenge to be met and surmounted, he has to play more vigorously his role as the stimulator and promoter of reform and innovation.

9. BIBLIOGRAPHY

1. DIANA CONYERS and PETER HILLS *An Introduction to Development Planning in The Third World*, John Wiley and sons, 1984, Scotland.
2. Pakistan planning commission: *The Fifth Five Year Plan 1978-83*, June 1978.
3. Planning Commission: *The Sixth Five Year Plan 1983-88*, Islamabad.
4. Planning Commission: the Eighth Five Year Plan
5. Government of Pakistan, Ministry of Education National Education Policy 2009.

10. Self Assessment Exercise

- Q. 1 Why countries feel the need to adopt planning as its strategy of development.
- Q. 2 Explain the position of educational planner when faced with the constraints in planning.
- Q. 3 Objectives and constraints place before the planner a wide range of choices. Explain the element of choices in the accomplishment of objectives.
- Q. 4 Discuss that objectives and constraints determine the scope and direction of planning.
- Q. 5 Examine the issues specific to objectives and constraints relevant to education.
- Q. 6 Critically compare the objectives of education of Malaysia and Philippines.
- Q. 7 What are the objectives of Education of Pakistan.
- Q. 8 Which constraints effect the formulation of objectives for educational development.
- Q. 9 Discuss the constraints which effect in the accomplishment of objectives of education.

Unit-4

POLICY FORMULATION, ASSESSMENT OF FUTURE NEEDS AND SETTING TARGETS

(UNESCO MATERIAL)

Revised by:

Dr. Zulkaif Ahmed

Reviewed by:

Dr. Syed Manzoor Hussain Shah

CONTENTS

S.No	Description	Page No.
	Introduction.....	59
	Objectives.....	60
1.	Policy Formulation	61
2.	Preparation for Policy Formulation.....	64
3.	Assessment of Future Needs.....	67
	3.1 Procedure for Assessing Future Needs.....	67
	3.2 Assessing Plan Requirements	69
4.	Costing Future Needs	71
	4.1 Determining Unit Costs.....	71
5.	Needs and Resources	73
6.	Establishing Priorities	74
7.	Setting the Targets.....	77
8.	Models and Computers in Target-setting	80
9.	Conclusion	81
	Answers to Self-assessment Exercises	82
	Additional Reading.....	83

INTRODUCTION

In the previous unit an overview of the various stages and sub-stages of the project cycle was presented. The activities undertaken in each stage were also enumerated briefly. In this and subsequent units each stage of the project cycle would be studied in some detail.

It would be recalled that objectives show the extent to which and the direction in which the country envisages the development of education. The diagnosis would reveal the defects and deficiencies which are to be corrected if the objectives are to be achieved. These defects and deficiencies reflect the gap between what a country wished to achieve and what it has at its disposal for that purpose. How is this gap to be bridged?

Let us take a concrete example. A country decides as one of its objectives of educational development that science and mathematics be made a core element of the curriculum in all schools during the next five years. A diagnosis of the current situation relating to the teaching of science and mathematics reveals such defects and deficiencies as:-

- out-moded syllabi and methods of teaching;
- unsuitable textbooks;
- only 40 percent of the school children receive any instruction in mathematics and science;
- only 30 per cent of the schools have at least a science room and some basic science equipment;
- only 60 per cent of the schools have teachers capable of teaching mathematics;
- only 40 per cent of the schools have teachers capable of teaching science;
- the maximum capacity of teachers' per year to meet the annual wastage and 50 per cent of the number needed to make mathematics and science compulsory (taking into account the growing enrolments).

It is clear that the gap between those objectives this country needs to achieve and what it has at its disposal is quite a large one. If we start calculating what it needs in the immediate future, we would proceed to prepare a list like the following:-

- 1) Revision of the curriculum in science and mathematics;
- 2) Provision of in-service training to all teachers of the two subjects;
- 3) Production and publication of necessary textbooks;
- 4) Equipping 70 per cent of the schools with science rooms and basic science equipment;
- 5) Expanding the cadre of mathematics teachers by 40 per cent and science teachers by 60 per cent and recruiting them for schools with vacancies;
- 6) Increasing the capacity of training colleges by four times to ensure that all the teachers needed are produced in five years.

But does an educational planner actually proceed to prepare such a list of future needs are seen as the diagnosis of the current situation is completed? If he does, for what purpose is it done? Here, we come to a crucial point as:-

- i) Policy-formulation; and
- ii) Assessment of future needs.

These are two sequential steps; that means, policy-formulation precedes the assessment of future needs. But the policy-formulation step cannot be undertaken unless the planner has some idea of the magnitude of the needs.

OBJECTIVES

When you have gone through this unit, you are expected to be able to:

- Understand the importance of policy formulation;
- Analyse through quick and simple calculations the implications of achieving determined objectives;
- Perform the functions of an educational planner in preparing or drafting policy;
Identify the needs in goods and services for achieving objectives as guided by policy;
- Calculate in quantitative terms the various kinds of needs;
- Compare the increases in needs and decide on the objectives and policies which needs reconsideration;
- Cost the needs; and
- Prepare the groundwork for the next step of establishing priorities and setting targets;
- Analyse and identify the future needs according to their contributions to achieve the objectives;
- Determine the priorities assignable to objectives programmes, projects and activities;
- Understand the concept of global sectoral and detailed targets;
- Work out targets on the basis of resources available and priorities assigned.

1. POLICY FORMULATION

Policy is a statement of aims, purposes, principles or intentions which serve as coaching guidelines for management in accomplishing objectives.

Every government prepares policies in order to set the guidelines and targets which it plans to achieve. A policy is typically described as a principle or rule to guide decisions and achieve rational outcomes. Policies can assist in both subjective and objective decision making. A policy can be considered as a “Statement of Intent” or a “Commitment”. The term may apply to government, private sector organizations and groups, and individuals. Policy merely guides actions toward those that are most likely to achieve a desired outcome. (<http://en.wikipedia.org>). A policy also means a definite course of action adopted for the sake of expediency, facility. It is a course of action adopted and pursued by a government, ruler, political party, (<http://dictionary.reference.com>). A set of policies are principles, rules, and guidelines formulate or adopted by an organization to reach its long-term goals and typically published in a booklet or other form that is widely accessible. Policies and procedures are designed to influence and determine all major decisions and actions, and all activities take place within the boundaries set by them. (<http://www.businessdictionary.com>) Policy provisions generally refer to the written laws that govern the rules and regulations promulgated by various government administrative agencies in order to implement the legislative enactments of insurance companies. (<http://www.tariqrahman.net>)

Educational Policy

Like all other policies, educational policies are prepared in order to plan for the education in the country. Education policy refers to the collection of laws and rules that govern the operation of education systems. (<http://en.wikipedia.org>). Educational Policy focuses on the practical consequences of educational policy decisions and alternatives. It examines the relationship between educational policy and educational practice, and sheds new light on important debates and controversies within the field. Educational policy blends the best of educational research with the world of practice, making it a valuable resource for educators, policy makers, administrators, researchers, teachers, and graduate students.

Education Policies of Pakistan

Soon after getting independence in 1947, the government of Pakistan initiated its planning for education. The first educational conference was an immediate effect towards a formal planning for education. Thereafter there is a series of planning different policies, plans, programmes and projects by the Federal Ministry of education. In Pakistan education has largely been a provisional subject but still Federal Ministry of education played a coordinating role and also educational policies and determines the curricula as well. After 18th amendments of the GOP the process of policy formulation may perhaps the place at primary level. The work as the policy formulation is given in the following paragraphs.

The first meeting on education was held at Karachi from 27 November to the 1st of December 1947. Quaid-e-Azam emphasized a lot on the education of the people of the new born state as he was well aware of the fact that only education can build this nation into a strong and stealthy nation. No wonder, besides setting up the infrastructure (Advisory Board of Education, Inter University Board, Council of Technical Education), the participants set out to consider what should be the ideological basis of education? This was the first point on the supplementary agenda and it is significant enough to be reproduced in full.

What should be the ideological basis of education? Whether the Islamic conception of universal brotherhood of man, social democracy and social justice should constitute this ideological basis cultivation of democratic virtues, i.e. tolerance, self-help, self-sacrifice, human kindness etc and the consciousness of common citizenship as opposed to provincial exclusiveness (GOP, 1947).

The First Meeting of the Advisory Board of Education for Pakistan held at Karachi from the 7th to the 9th of June, 1948 (GOP, 1948) took practical measures to implement the major political and ideological policies announced earlier. At this stage it appears that the government's policy was to teach children in the mother tongue; switch after five to six years of schooling to Urdu and then teach in English at the highest level. However, Appendix VI suggested the replacement of English by Urdu by 1957 or so. The policy was also to Islamize education. However, up to 1958, nothing concrete was done to change the status quo. If one looks at the meetings of the Advisory Board of Education (GOP 1949, 1950, 1954 etc) one notices three kinds of proposals: ideological and political; pertaining to quality; pertaining to quantity (Rahman, 1996). Different educational policies have been proposed in Pakistan since 1947. Following Education Policies have been brought about in the country.

1. All Pakistan National Education Conference, 1947
2. Commission on National Education, 1959
3. New Education Policy, 1970
4. Education Policy, 1972-80
5. National Education Policy, 1979
6. National Education Policy, 1992
7. National Education Policy, 1998-2010
8. National Education Policy, 2009

Education has been source of political and intellectual debate. The debate is shaped by different perspectives on impact of education and how education should be produced and financed. Federal Minister for Education heads the Ministry of Education and is assisted by the Education Secretary. The Ministry of Education has six administrative wings/cell, i.e., (i) Curriculum wing, (ii) Policy and Planning Wing, (iii) Projects Wing, (iv) Training Wing, (v) Administration Wing and (vi) Monitoring and Evaluation Cell. The Joint Educational Advisor heads each Wing. Besides Wings, the Ministry of

Education has a number of subordinate and attached bodies for its assistance. The major functions of the Ministry of Education are to:-

1. Formulate national education policy and to ensure its implementation.
2. Coordinate with provinces and other organizations in educational matters.
3. Develop curriculum and ensure uniformity in education throughout the country.
4. Coordinate with foreign governments/international agencies for the development of education in the country.
5. Award scholarships for students and professional growth of teachers.
6. Look after the development of education in the country and provide necessary funds. (EFA report, 2008)

Some of the Functions of Policy and Planning Wing are:

- Formulation of National Policies, Plans and Programs in Education.
- Process all development schemes
- Organize Inter-Provincial Education Secretaries/Ministers' meetings.
- Prepare and monitor implementation of PSDP, Medium Term Plan (MTP) and Perspective Plan (PP)
- Coordinate release of funds with Finance Division, Planning and Development Division and AGPR
- Monitoring and evaluating educational sector expenditures
- Assist and coordinate with Provincial Education, Finance and Planning departments and District Governments to develop education sector plan
- Collection of statistics
- Development of curricula and textbooks
- External examinations
- Equivalence of degrees and diplomas

2. PREPARATION FOR POLICY FORMULATION

To make detailed calculations of future needs as soon as the diagnosis has revealed a gap between what the system needs and what it has would be a time consuming task. What is worse is that the entire effort would be wasted if the gap is too large and the policy-makers are compelled to revise the objectives. So with a view to saving unnecessary work at this stage, the educational planner resorts to what we would call thumb-nail calculations that is, calculation which could be done quickly but would be enough to show whether the objectives are realistic.

The six points which we identified above as needs to implement an objective of compulsory mathematics and science teaching constitute such a calculation. We did not go into all the details of man, materials and money. But we identified the extent of the increases to ask ourselves the question whether such an expansion is within outreach. Here, we need to be careful. When we consider whether the expansion is within our reach or not we strictly go on the assumption that the methods and procedures currently in use would continue to be applied. So in our calculation of percentages we have assumed that these needs would have to be met under the existing ways of teaching science and mathematics. If at the conclusion of such a calculation, we say that the objectives are unrealistic we only make it as a qualified statement. It would only mean “unrealistic in terms of the existing practices, procedures and methods.”

Sometimes, we would make our thumb-nail calculations in an analytical manner as we did while identifying the six points above. We adopt a simpler method. We work with available cost data. Let us assume that the recurrent unit cost per pupil for teaching science and mathematics is Rs. 400 per year over and above Rs. 500 for rest of the subjects. We proceed to calculate on this basis that:

- 40 per cent of the school children cost Rs. 900 each per year.
- 60 per cent cost Rs. 500 each per year.

The cost per 100 children in the above proportions would be:-

40 x 900 — Rs. 36,000

60 x 500 — Rs. 30,000

Rs. 66,000

Thumb-nail is an expression which means small, but essentially complete.

The objective of compulsory science and mathematics would mean that the cost per 100 students should go upto Rs. 90,000 (i.e. an increase of Rs. 24,000). That means the recurrent cost of education would go up by 36 percent. A similar quick calculation would be made for the capital expenditure required for science rooms and equipment.

This method of thumb-nail calculation, using unit costs, is quite handy in scrutinizing objectives relating to the expansion of enrolments. Say, a country decides that its current primary enrolment ratio of 60 percent be increased to 90 percent during the next five years: suppose that the enrolments for Yo — 6,000. Here, we can make two

alternative decisions:-

- i) Increase enrolment of 6,000 in Y₀ to 9,000 in Y₅ by means of arithmetical progression (at an annual *simple* growth rate of 10 percent)
In arithmetical progression the increase is by a constant number which in this case would be 9,000-6,000 or 600. As 600 is 10 percent of 6,000 the annual simple growth rate is 10 percent.
- ii) Increase enrolment of 6,000 in Y₀ to 9,000 in Y₅ by means of geometrical progression (at an annual *compound* growth rate of 0,85 percent).

In geometrical progression, increase each year would be greater than that in the preceding year. The increase of each year is compounded (added to the base enrolment before applying the percentage increase for the next year). At 8.5 percent the enrolment would increase from 6,000 to 6,510 during Y + 1 (8.5 percent of 6,000 is 510). Enrolment during Y + 2 would increase from 6,510 to 7,060 (8.5 percent of 6,510 is 553). And so on. The corresponding figures for increases by arithmetical and geometrical progressions for the five years are given in the table below.

Table-1 — Annual Enrolments under the Two Alternatives

Year	Arithmetical progression	Geometric progression
Y + 1	6,600	6,510
Y + 2	7,200	7,063
Y + 3	7,800	7,663
Y + 4	8,400	8,313
Y + 5	9,000	9,020
Total	39,000	38,560

If the unit cost is Rs. 500 the total investment needed in the five year plan period would be as follows:

- | | | |
|-----|--------------------------|--------------|
| i) | Arithmetical progression | Rs. 19500000 |
| ii) | Geometrical progression | Rs. 19280000 |
| | Difference: | Rs. 220000 |

The above thumb-nail calculation would indicate to the policy-makers how much the additional enrolments would cost and which pattern of growth would cost less. These thumb-nail calculations are required to advise the policy-makers on the overall impact of the objectives in terms of needs. The purpose of this advice is to enable them to take certain broad decisions relating to the objectives. Those decisions can be of the following nature:-

- i) Narrow down or re-interpret the objectives; or
- ii) Spell out alternative ways and means of accomplishing objectives; or
- iii) Both.

Let us go back to the example of introducing science and Mathematics. On discovering that it would mean a 36 percent increase in the annual recurrent cost plus

capital expenditure to build and equip science rooms in 70 percent of the schools, the policy-makers might decide to:-

- i) Concentrate on the secondary level only,
- ii) Construct central laboratories to which students from several neighboring schools would go for practicals.
- iii) Expand teacher education facilities with a target of having the required number of teachers trained in ten instead of five years and so forth.

These decisions constitute the policy. In the process, the objectives are reconsidered and principles of action are evolved in the form of strategies. Policies relate to each aspect of education and cover all objectives. As a body they constitute the national educational policy.

What is the educational planner's role in policy-formulation? Strictly, it is a political function and is performed by the political policy-makers of the country (e.g. Minister, Cabinet or Council of Ministers, Chief Executive of the State). The Educational Planner is expected to play the key role of a technical advisor to such authorities. His function, therefore, is twofold:-

- 1) He has to analyze the objectives with appropriate recourse to thumb-nail calculations and present a concise picture of the implications of each objective. In this, he would, indicate the magnitude of the constraints in relation to men, materials and money.
- 2) He would present alternative methods of achieving as much of the objectives as possible for consideration by political authorities. Each alternative would also be analyzed to show its needs in men, materials and money.

In performing this role, the educational planner has to remember that policy is the instrument of educational reform. It is through policy that reform measures are initiated and innovations installed. As such, this is the most creative step in the process of educational planning and its results are by far the most far-reaching. The importance of mobilizing all available technical and professional expertise for this purpose cannot be overemphasized.

In some countries, the educational planner's role does not end with the offer of advice. He is actually involved in drafting the policy. Then he cannot step with: the presentation and evaluation of various alternatives. He has to choose one of the alternatives and develop it in detail in the form of a draft policy statement. This phase of work requires very close consultation with the policy-makers on one side and the professional colleagues of the national educational system on the other. It is a critical task in which the educational planner is called upon to rely on his skills of negotiation.

Note: Compare the use of the term 'policy' in this section with that in section 1.1 of unit 2.

Activity

Compare the provisions of different educational policies and comment that
To what extent we have been able to achieve them so far.

3. ASSESSMENT OF FUTURE NEEDS

Once the objectives are modified and the principles of action laid down by policy, the educational planner proceeds to assess the future needs of the educational system to achieve such objectives in the manner envisaged. Now he is on a firmer footing than when he had only the objectives. A greater degree of realism and feasibility would have resulted in the process of formulating the policy. So, he could proceed with the calculation of needs more confidently.

The needs of the educational system are in the form of services and goods or, in other words, men and materials. As goods and services are ultimately purchased with money, the needs in the final analysis have to be expressed in terms of funds required. But we do not consider money in the initial steps of assessing future needs. This is to be postponed until we have a clear picture of all our needs in terms of men and materials the latter term extending to include land, buildings, equipment, machines, besides expendable or consumable materials.

3.1 Procedure for Assessing Future Needs

A procedure for assessing future needs, consisting of seven steps is outlined below.

- Step-I Calculate, on the basis of the national educational policy, the number of persons to be served. Where applicable and possible, this clientele should be expressed in terms of their needs, preferences and geographical distribution. Thus, if the policy lays down those 100 per cent boys and 80 per cent girls of age five should be enrolled in class I by a certain year, we need to calculate: the additional number of boys and girls to be enrolled; the break-up of the total number of additional boys and girls by provinces areas and by urban rural.
- Step-II Estimate the number and size of different types of institutions or programmes required to serve the clientele. Here again, a clear idea of the nature of these institutions and programmes as well as their geographical distribution is very necessary. With the changing concept of education, this task is becoming more complicated. With the wide variety of teaching-learning situations formal, non-formal and informal which are now available, their nature, size and distribution have to be systematically worked out.
- N.B:- This step is a critical one, because the results of all other steps are determined by this.
- Step-III Determine the number, competencies and job descriptions of persons who would organize and conduct the requisite teaching-learning situations, worked out under step II. Personnel required fall into various grades and levels: teachers for different levels and types of education, with different subject specialization; Para-teachers or teaching aides who are involved mostly in non-formal programmes of education, supervisors, specialists in various professional functions like curriculum

development, evaluation etc; administrators of different grades.

- Step-IV Calculate the material needs such as textbooks, teaching aides and materials, apparatus, equipment.
- Step-V Determine the needs in buildings, furniture, fittings and other facilities.
- Step-VI Identify and estimate the needs in incentives and assistance to students in the form of scholarships, grants or loans, etc.
- Step-VII Identify and estimate the needs, if any, of ancillary services like transport, medical and dental care, placement in employment, etc.

If all these steps are undertaken within an educational planning unit, one important requirement must be borne in mind: that is, to involve the various specialized units, divisions, which are responsible for each aspect of education. It is only through consultation with all concerned that a correct assessment of needs can be made. For example, the unit concerned with curriculum development may have some innovations in mind which may have to be taken into account. Or the unit dealing with science education may require specialized types of laboratories equipments for implementation of the science policy.

In this exercise, various quantitative techniques would be of use to the educational planner, future needs, calculated in the manner described above, would be for the entire plan period.

It is not necessary at this stage to think in terms of annual requirements. We are still in the process of determining how big are operation we could realistically undertake. It must be remembered that, at a later stage of the educational planning process, we would spell out the targets which we would actually try to achieve. Therefore, the assessment of future needs, done at this stage, is a means of developing essential information which would guide us in later discussions. This being the purpose of this exercise, we could adopt a useful and convenient short cut. Instead of working out the needs for every year of the plan period, we could project the situation as it would be in the last year of the plan period.

The process of assessing future needs may be elaborated with the help of an example. Suppose that we are in the process of developing an education plan for the period 1996-2000. On the basis of the policy, we project the size, nature and distribution of the clientele as in 2000. Say, we are dealing with the school level: by 2000 our enrolments are expected to be:

14,300	boys and	10,200	girls in primary schools;
4,800	boys and	2,100	girls in secondary schools; and
1,000	boys and	400	girls in technical schools.

On the basis of standard and norms determined in new policy the needs for the year 2000 have been worked out below.

Table 2 — Assessment of Future Needs of a School System Item

Item	Norm or standard per number of pupils	Number of class rooms labs teachers		
		Primary Schools	Secondary Schools	Technical Schools
(1)	(2)	(3)	(4)	(5)
Classroom	Pr. 40 Sec. 35 Tech. 25	612	197	56
Science Laboratories	Sec. 200 Tech. 120	—	34	12
Workshops	Sec. 120 Tech. 80	—	58	18
Teachers (Male)	Pr. 32 Sec. 25	447	192	67
Teachers (Female)	Tech. 18	319	84	11
Textbooks	Pr. 4 per pupil Sec. 8 per pupil Tech. 6 per pupil	98,000	55,200	8,400
Scholarships	Sec. 20% Tech. 40%	—	1,380	560

We could go on to cover all other items.

Under the “Norm or standard column” (col. 2), the first entry “Pr. 40” means that one classroom per 40 students will be constructed.

Under columns 3, 4 and 5 the number of classrooms to be constructed to serve the estimated clientele has been entered. These figures are obtained by dividing the number of students by the number of pupils per classroom.

3.2 Assessing Plan Requirements

Through the procedure outlined above the requirements of men, material and money (teachers, facilities like building, laboratory, equipment, textbooks, etc., and scholarship) required by the end of the plan period are calculated. Once this is known, we can find out what we need to acquire during the plan period. This is done by comparing what we have in the base year with what is needed at the end. We prepare a balance sheet of what we have and that we will need.

Returning to our example in the previous paragraph, we would prepare a balance sheet in the following manner:

Table 3-Assessing Needs During the Plan Period

Item	2008	2012	Needs during plan period
Classrooms:			
Primary	380	612	232
Secondary	108	197	89
Technical	24	56	32
Science Laboratories			
Secondary	12	34	22
Technical	4	12	8
Teachers (Male):			
Primary	342	447	105
Secondary	128	192	64
Technical	36	67	31
Teachers (Female)			
Primary	123	319	196
Secondary	32	84	52
Technical	1	11	10
Text-books:			
Primary	36,500	98,000	61,500
Secondary	14,300	55,200	40,900
Technical	1,080	8,400	7,320
Scholarships:			
Secondary	420	1,380	960
Technical	75	560	485

Analyzing these figures further, it would be found that the percentage increase over the 2008, stock during the plan period is as follows:-

Classrooms	69 percent
Science Labs.	188 percent
Workshops	124 percent
Teachers (Male)	40 percent
Teachers (Female)	165
Textbooks	211 percent
Scholarships	292 percent

The same applies to the other cases.

The increases, when calculated both in absolute numbers and percentages, show whether they are too ambitious or not. Some anticipated increases would appear unrealistic. If these are clear enough we could make our decisions at this stage or whether future changes in “objectives and principles of action are necessary. It would be perfectly in order to refer the problem back to the policy-making authorities and indicate why the policy, as formulated, needs to be considered. But, sometimes, the increases might not be too ambitious and the objectives and the principles of action, embodied in the policy, would appear feasible. In that case, we proceed to the next step of costing the needs so that we would express them in terms of money.

4. COSTING FUTURE NEEDS

As in the case of assessment of future needs, we could estimate the total cost of the requirements of the system in the last year of the plan period. It is assumed that complete and reliable cost data are available in respect of various services/activities. The educational planner has to devote adequate attention to preparing a reasonably accurate set of cost data both on the basis of past trends and analysis of current costs.

Analytical estimation of costs by determining the quantum of labour and materials required for every identifiable operation obviously gives the most reliable cost data. For convenience of application, we reduce the cost data to unit i.e. cost per pupil, cost per teacher, cost of creating a school seat, cost per laboratory, workshop, textbook, etc. The cost requirement is then worked out by multiplying the needed services/facilities by the relevant unit cost. Thus, if 232 additional primary school rooms are required during 1996-2000 and if the unit cost of a classroom for primary school is Rs. 2,50,000 the total amount required for primary school buildings during the plan period would be Rs. 58,000 million.

4.1 Determining Unit Costs

Unit cost is an extremely useful tool for planning. It is therefore important that the planner should be able to work out unit cost of various physical facilities and services. The first step in making a crude estimate is to find out the present cost of these facilities/services from some recently completed scheme or from the office of the District Education Officer. The next step could be to adjust this unit cost for inflation.

ILLUSTRATION

Looking through the Punjab provincial ADP (1986-87) one finds that an urban primary school building for 225 students has been completed at a cost of Rs. 0,500 million. The per student capital cost comes to Rs. 2,222. In using this unit cost for estimating the plan cost, the urban primary schools to be constructed during the first year of the plan would be costed at the per student cost of Rs. 2,222. In the second year of the plan the unit cost would be Rs. 2366 (at 6.5 per cent inflation). During the third year it would be Rs. 2,530 (compounded at 6.5 per cent). And so on. Besides being a crude estimate, the method is complicated because a separate unit cost is used for facilities to be built in different years of the plan.

An alternative method. A more defensible method of estimating the unit cost is the one used by the planning commission in connection with the Seventh Five Year Plan. Assuming the life of the building to be 25 years and the life of furniture equipment to be 10 years, the capital recovery factor was used to determine the per student capital cost. Capital recovery factor is used to determine the amount of (equal) annual installment that will repay the cost by the end of the life” of that facility along with compound interest on the balance.

In the calculation shown below the current bank rate of 14 per cent has been used.

Table 4-Computing Unit Cost

Item	Cost (Million Rs)	Capital Recovery Factor	Annual cost using Capital Recovery Factor Rs.	Annual Cost per student Rs.
(1)	(2)	(3)	(4)	(5)
Rural primary school (80 students)				
(i) Building (25 years)	0.150	0.145498	21.825	273.00
(ii) Furniture and equipment (10 years)	0.025	0.191714	4,793	59,90
Total Development cost	0.175	—	—	332.90
Annual Recurring Cost	0.030	—		375.00
Annual cost of primary school student				708.00

Figures in column (3) are taken from the compounding and discounting tables.

Figures in column (4) are obtained by multiplying (2) by (3)

Figures in column (5) are obtained by dividing (4) by 80.

Applying such adjusted unit costs, we would cost each activity we propose to take up during the plan period. When we know the cost of each set of activation and the total financial outlay which the plan would require for its final year, we compare the increase with the current expenditure. It should not be surprising if the increase appears quite ambitious. It is always useful to compare this increase with the past trends. What has been the rate of growth of educational expenditure during the last five, ten or fifteen years? If the anticipated growth rate is much higher than the past rates we are in for a very difficult time when we proceed to the next step of the educational planning process, which is the establishment of priorities and setting targets.

5. NEEDS AND RESOURCES

We have in our discussion of the educational planning process, come to a point where we conclude a preparatory phase and start on the phase of making hard choices. Upto now, we have seen how the process which began with the establishment of objectives progressed to the stage when we had assessed the future needs and coasted them approximately. Through these preparatory phases, we have gathered all of the relevant information which would help us to answer such questions as the following:-

1. How much of the goods and services, which we have identified as our future needs to achieve the objectives of educational development, can the country actually provide?
2. An needs are bound to be in excess of the resources, which of the objectives should receive priority consideration?
3. What shall we actually achieve under each objective? How can we specify our selected level of achievement in quantitative terms?

What we aim to achieve with such a line of questioning is a set of decisions specifying the targets of our plan. It is a process of narrowing down what we like to achieve into what we must actually achieve.

Realistic targets form the very foundation of a plan. A target, it may be emphasized is not a statement of intentions in a vague form. A target is a fixed quantity or a measurable level. It has been defined as objective to which a number is attached either in the form of a quantity or a date or both. For instance, “providing universal primary education as early as possible” is an objective, which becomes a target when it is presented in a form like 80 per cent of children of age-group X-Y to be enrolled in schools by 1985, 90 percent in 1990 and 100 percent in 2000.

An example of a target with only a date would be “the revision of primary school curricula to include work experience by 1980.” Even in this case, one could say that a quantity is implied because all curricula are required to be revised by this date.

Setting targets brings us to the level of concrete action. We are no longer considering our wants and wishes in an exploratory manner. What we select now as our targets is what we really think to be within our capacity and resources, what we concentrate on achieving to bring us closer to the ultimate accomplishment of our objectives. We cannot afford to be over-ambitious or over-cautious. We can neither aim too high nor too low.

6. ESTABLISHING PRIORITIES

In planning and management, priority means the grading of the claim for resource allocation. Objectives, programmes, projects, agencies etc. are all competitors for resources. The resources being always scarce and limited, each has to make a claim for its share of resources and justify it. The authority concerned with each objective, programme project or agency would, quite naturally, consider their own activity to be of foremost importance and justify it accordingly.

Each one of them would be correct in what they say and their justifications would be no doubt tenable. But everyone cannot get all the resources which are justified as required by them. Someone has to undertake the unpleasant task of not only telling that but grading each one's claim in an order of importance from the point of view of overall needs or policy. This someone is, often, the planner. How does he proceed to ensure that the place he assigns to something in an order of importance or priority is reasonable if not correct?

Assigning importance or priority to a group of things would mean that they are immediately put into three broad categories:-

- i) "Dispensable" — i.e. not urgent and hence could be abandoned or postponed for the present.
- ii) "Wants" — i.e. desirable but not essential.
- iii) "Musts" — i.e. essential and cannot be postponed or abandoned. "Musts" include, above all, commitments made in the past which, therefore, have to be provided for till the conclusions of such commitment (e.g. salaries and salary increments of personnel in service, operational costs of institutions; fund for ongoing projects.)

The first task of the educational planner, when he proceeds to establish priorities, is to identify that part of the assessed future needs which falls in the category of commitments. The "throw forward" statement, as it is called in the parlance of particularly large projects and foreign-aided projects. It would be found that as much as 80 percent of the needs would belong to this category. The planner has no alternative but to accept them as his first priority.

To assign the rest of the needs into the categories "musts" "wants" and "dispensable" he should have a carefully prepared set of criteria. From where does he derive his criteria? The principal source of these criteria is the statement of objectives and the national educational policy. But in using them one has to be careful. The order in which the objectives or policies are listed may not necessarily be an order of priority. Most statements of objectives and policies adopt a logical order more or less in the following form:

- (i) considerations of quantitatively expanding the educational system to serve increasing clientele due to increase in population or social demand for educational, In this category fall programmes for the expansion of primary education, up-gradation of primary into middle and middle into high schools, establishment of colleges, etc.

- (ii) considerations of improving the quality of educational system; Programmes of teacher training, revision of curricula, improvement of textbooks, provisions of laboratories and equipment fall in this category.
- (iii) considerations of gearing education to the needs of socio-economic development. Introduction of agro-technical courses; integrating population education and environmental studies into the curriculum are examples in this category.

Sometimes, they adhere to the division of the educational system into levels and types of education. In others, it could be combinations of the above two arrangements. Thus, one has to examine the statements thoroughly to ensure whether they already indicate the priority which national authorities would assign to various objectives. In case the statements are not helpful, it would be necessary to consult the policy making authorities and obtain a clear directive from them. This is our first criterion: we adopt the priority assigned to each objective of educational development by the policy-making authorities.

Now, we take into consideration the needs which we have identified and costs according to procedures discussed earlier in this unit. Our attempt is to put them into the three categories of “wants” and “dispensable”. As we would recall, we identified our needs on the basis, of a diagnosis of the existing situation. The diagnosis highlights the defects and deficiencies to be remedied through a corrective action. So the corrective action which is reform of the existing situation-deserves high priority as “musts”. Where several corrective actions under the same objective are competitors for resources, we have to evaluate them further to identify an order of priority among them.

- Example:-* Under the objective of improving science education, the-following corrective actions are identified with costs as for the five-year plan period;
- (i) increase the number of pupils studying science through a system of incentives (10.00 Million);
 - (ii) revise the curricula in science subjects to make contents relevant to the needs of the currently in use ((6 Million));
 - (iii) provide in-service training to teachers to improve methods of instruction ((5.00 Million));
 - (iv) award scholarships annually to ten science teachers and supervisors for study abroad (1.00 Million);
 - (v) publish popular books on science and hold frequent exhibitions to develop an awareness among people on science and technology (1.00 Million);
 - (vi) give subsidies to newspapers to publish special supplements on science (5 Million);
 - (vii) construct science laboratories in 4000 schools through a ten-year projects (600 Million).

On assignment of priority to this objective, the “ceiling” for it has been fixed at Rs. 20,000,000 for the plan period. Now the task of the educational planner is to evaluate this list of 7 items and determine the priority among them in the allocation of the provision of Rs. 20 million. The first step is to analyse them into the three categories:-

Dispensable: Items i. and vi: (Reasons: facilities by themselves would be adequate incentives. There is no need to provide any other incentives; subsidies to newspapers for popularizing science in an activity which should be taken up only if resources are plentiful.)

Wants: Items iv. and v.

Musts: Items ii., iii., and vii.

Among the “musts” which are the most urgent?

- items ii and iii. would qualify to be regarded the most far-reaching in this impact (65 million).
- item vii. would be the last (600 Million).

On the basis we would assign priorities as follows:-

Priority:

1. Items ii and iii.
2. Item vii,
3. Item v.
4. Item iv.
5. Item i.
6. Item vi.

We may summarize our discussion on the establishment of priorities as follows: -

- i) The order of priority among objectives is either indicated by the policy-making authorities or settled in consultation with them.
- ii) The priority among needs under each objective is worked out first by analysing them into the two broad areas of (a) needs to fulfill or continue on going commitments and (b) needs for future development — i.e. growth and change. Needs to meet commitments would receive highest priority.
- iii) Needs for future development will again be considered in two groups:
 - a) those needed for corrective action — for reform and improvement;
 - b) those needed for growth or expansion.
- iv) In each of the above two groups, the needs will be analysed into three categories:

Dispensable: to be given lowest priority
Wants: to be considered if resources permit
Musts: to be given higher priority

Inside each category, the needs will be arranged according to their importance in relation to the objectives. These which bring about the most far-reaching results would receive higher priority.

We have approached the establishment of priorities as a mental-intensive operation. We have highlighted logical thinking as its basis and would emphasize the involvement of as many informed persons as possible in a participatory effort would substantially enrich the results. There are also some mathematical techniques which could be used in this exercise. One of them, namely Cost-Benefit Analysis, is discussed in some detail in the next lesson unit. Another is the technique of operations research, which includes such methods as linear programming, simplest technique, dynamic programming and queues. Unless a problem is serious enough to justify the time, effort and resources necessary for these techniques, their application is not recommended.

7. SETTING THE TARGETS

Broadly planning as a process of working out future course of action based on national decisions aims at attaining a set of commonly agreed upon objectives/ developmental goals. In the planning exercise their objectives are then translated into clearly defined quantitative targets.

A target is a predetermined quality or level which the planner aims at attaining within a specified period. It is fixed because he must have a firm basis on which to determine how much of his resources would be allocated towards its achievement. The planner may revise his targets upwards or downwards from time to time. But during the intervals between such revisions the targets remain fixed as a guide to implementing agencies, it is this particular characteristic of being a fixed point for a certain length of time which makes target setting a very important step in the planning process. The target for the time being becomes the point of concentration of the efforts of an organization.

Target setting is the final phase of a gradual process of choosing what should be undertaken during the plan period. We observed how objectives are elaborated and modified through policies and how policies enabled the assessment of future needs. In establishing priorities among the identified needs, we choose those items which are “musts.” At the target setting phase, we decide how much of the “musts” we should aim at and for which resources are to be allotted. The decision of how much is determined by the availability of resources.

The resources available for education can be projected with the help of available data. A reliable estimate of the quantity and the nature of the resources is the first step in setting target.

Targets in education are of two types: global targets and sectoral or detailed targets. Global targets are in the form of the number of persons to be served by the education system. The total enrolments to be attained in different levels and types of education or educational institutions or programmes represent such global targets. These could be expressed in actual numbers (e.g. 2.5 million children in primary schools, 0.7 million in secondary schools, etc.) or as percentages of corresponding age groups (e.g. 85 percent of children in age-group 6-14 or in terms of growth rates. On the basis of some thumb-nail calculations we would decide on a set of global targets of this nature as a tentative framework for the consideration of sectoral or detailed targets. We call it a tentative framework because we may have to revise it several times as we work out the detailed targets. The revisions of the detailed target may be difficult unless we have a global target to guide us.

(Here again, we have an illustration of the reiterative nature of the educational planning process. At various stages of this process, we have to go back to stages we have already completed, make revisions in them and re-do the whole exercise all over again. This would take place several times before a satisfactory plan could be evolved.)

We proceed to set the sectoral or detailed targets on the basis of the priorities we have assigned to the future needs. Let us consider the “procedure by going back to the example we worked out in the previous section.

Example: With Rs. 20 million as resources estimated to be available, we have to set targets for the priorities we have identified.

- Item ii. How much of the activity?
- Item iii. How many teachers to be given in service training?
- Item vii. How many science laboratories to be constructed?
- Item v. How many books and exhibitions or how much of funds to be allotted?
- Item iv. How many teachers and supervisors to be sent abroad?
- Item i. What incentives, in what form, for how many?
- Item vi. How much to be allotted as subsidies?

Here, again we need our cost data. Unit costs would be required for items like iii, vii, vi. Assuming that we have these data, we could set targets like the following:-

- Item ii. As this is considered the highest priority in this activity, take up the entire activity of revising curricula and providing textbooks — Rs. 6,120,000.
- Item iii. On a Unit cost of Rs. 100 per teacher set a target of 500 teachers per year for the five years Rs. 250,000.

We have thus provided for what we considered to be the most important activities. We have five more items and a sum of Rs. 13,630,000. Item vii (with a unit cost of Rs. 14,000 per laboratory) is the targets and the needs identified come upto 2,000 laboratories. It is clear that funds are not available to meet the full needs. This means that what was proposed as a ten years project would have to be extended. Such a decision being unavoidable, we could postpone considering this items. Here, we may start from the lowest priority:

- Item vi We may decide to drop this item altogether. So we make no allocation for it.
- Item i We may be inclined to drop it. But we may have advice from the relevant units or divisions that a system of incentives should be tried out. We may, therefore, agree to an experimental or pilot project and provide a lump sum of Rs. 50,000.
- Item iv We may have the same experience as in item i. So in reference to the units or divisions concerned, we allow five scholarships per year for the five-year period Rs.125,000.

Now we find the balance available for further allocation as Rs. 13,455,000. This has to give us targets in items vii and v. If this whole amount is set aside for science laboratories we could set a target of 960. On negotiations with the units or divisions responsible for item v, we may decide to reduce the science laboratories to 950 and allow an allocation of 150,000 for item v. On such a basis we could conclude a set of targets as follow:

Item ii.	full activity	Rs. 6,120,000
Item iii.	500 teachers per year	Rs. 250,000
Item vii.	190 science laboratories per years	Rs. 13,300,000
Item v.	50 percent of identified needs	Rs. 150,000
Item iv.	5 per year	Rs. 125,000
Item i.	pilot project	Rs. 50,000
Item vi.	Dropped	Rs. —
		Total: Rs. 19,995,000

SELF-ASSESSMENT EXERCISE-1

Question-1

The Government has decided to raise the participation rate for primary education from 60 percent in 2001 to keep primary education for children of ages 5-9 years or to switch over to the age group 6-10 years.

The population and social planning section of the Planning Commission has worked out the following population projections:

						Million
Age	2001	2002	2003	2004	2005	2006
5-9 years	15.00	15.52	16.05	16.58	17.11	17.64
6-10 years	14.60	15.11	15.62	16.14	16.66	17.18

- (a) Compute the number of children that would be in the system each year under the two alternatives if the target is to be achieved according to the following phasing:-
- | | | | | |
|------|------|------|------|------|
| 2001 | 2002 | 2003 | 2004 | 2005 |
| 63% | 67% | 73% | 80% | 90% |
- (c) Assess the financial requirements for the *two alternatives* according to the phasing given in (a) above. As per unit cost of educating a primary school child worked out by the Planning Commission.
- (d) Assess the financial requirements for the two alternatives according to the phasing given in (b) above. Using the unit costs of the Planning Commission.

Question-2

- (a) Why are the financial requirements same for year 2006 for alternative I under both phasings?
- (b) Why are the financial requirements same for year 2006 for alternative II under both phasings?

Question-3

- (a) Which of the two given phasings would you prefer and why?
- (b) Which of the two alternatives would you adopt and why?

Question-4

Calculate the cost of educating a student in urban primary schools, rural secondary schools (single section) and urban secondary schools (double section) of Islamabad on the basis of data given below.

- (a) Urban primary school (single section for 225)
- | | |
|-----------------------|--------------------|
| Building | Rs. 0.450, million |
| Furniture equipment | Rs. 0.050, million |
| Annual Recurring Cost | Rs. 0.090, million |
- (b) Rural Secondary School (Single section for 225)
- | | |
|---------------------|-------------------|
| Building | Rs. 2.100 million |
| Furniture equipment | Rs. 0.400 million |
- (c) Urban secondary school (double section for 450)
- | | |
|---------------------|-------------------|
| Building | Rs. 6.500 million |
| Furniture equipment | Rs. 0.700 million |
| Annual Rec. cost | Rs. 0.460 million |

Notes: Life of the building may be assumed to be 50 years.
Capital recovery factor at 14 percent for 50 years is 0.1402

8. MODELS AND COMPUTERS IN TARGET-SETTING

A significant step in improving the efficiency of target-setting is the technique of model-building and the use of computers. Models are mathematical expressions which represent the relationship among the various needs of the educational system.

$$e.g. T = \frac{E}{C} \times S$$

Where T teacher cost
 E enrolments
 C average class size
 S unit salary per teacher

As a highly simplified example of a model, this has four variables. They are called variables because different values could be assigned to them. We assign values according to policy. Say, for example, we are working on a policy that T should not exceed 80 percent of the total education budget. With this T becomes fixed and we have three variables which have to be manipulated to get the best results. If T is very low, we could limit E (reduce enrolment) and or increase C (lay down a higher average class size) and or reduce S (reduce unit salary of teachers by such means as recruiting teachers with lower qualifications and consequently receiving lower salaries). What is the best combination of these possible courses of action? Another way to ask this question is: What targets would we set for E, C and S? To arrive at the best combination we have to work out a variety of combinations and evaluate the results of each combination. This is the reiterative process to which we had already made reference.

The advantage of a model is that the process of working out a wide range of results from different combination of targets can be computerized. A computer could calculate thousands of combinations within minutes. It will take each variable and give a range of values and produce the resulting picture. With a large number of such alternative combinations and their results, the educational planner's task of picking out the most acceptable combination becomes both simple and reliable.

9. CONCLUSION

Establishing priorities and setting targets marks the most important step of what is called the “planning stage” proper within the entire educational planning process. The next lesson unit will acquaint you with a special technique used in establishing priorities through cost-benefit analysis.

Self-assessment Exercise–2

- Question 1: Why is policy-formulation an essential intermediate step between the establishment of objectives and the assessment of future needs?
- Question 2: Why does the planner resort to “thumb-nail calculations” before any policy is recommended? If after such a calculation he says that the objectives are unrealistic, what does he really mean?
- Question 3: What is the role of the educational planner in the formulation of the national educational policy? Assess the contribution you or your unit has made in the formulation of the educational policy of your country.
- Question 4: Prepare a proforma which you will use in getting all concerned units and divisions to report to you on the future needs as assessed by them. What information will you supply to ensure accuracy of the estimates?
- Question 5: Why is costing of future needs important? What are the pre-requisite for a satisfactory costing exercise?
- Question 6: Why do we describe the establishment of priorities and target setting as a phase of making hard choice?
- Question 7: Is it justifiable to assume that needs as assessed in relation to policies have once again to be evaluated in terms of “dispensables”, “wants” and “musts”?
- Question 8: Why should needs identified for corrective action has precedence over those identified for growth or expansion?
- Question 9: What modern techniques could the educational planner employ in establishing priorities and setting targets? What considerations should be kept in mind when employing such techniques?
- Question 10: What is the advantage of models in target-setting?

Answers to Self-assessment Exercises

Answers to Exercise No. 1

Question No. 1

a)	Number of children in the system according to phasing (a)						Million
	Ages	2002	2003	2004	2005	2006	Total
	5–9	9.93	11.07	12.44	14.03	15.88	63.35 million
	6–10	9.67	10.78	12.11	13.56	15.46	61.58 million
b)	Number of children in the system according to phasing (b)						Million
	Ages	2001	2002	2003	2004	2005	Total
	5–9	9.78	10.75	12.10	13.69	15.88	62.20 million
	6–10	9.52	10.47	11.78	13.33	15.46	60.57 million
c)	Financial requirements under phasing (a)						Million
	Alternative	2001	2002	2003	2004	2005	Total
	I (5–9 yrs)	7030	7837	8808	9933	11243	45851
	II (6–10 yrs)	6846	7632	8574	9600	10946	43598
				1998	1999	2000	Total
d)	Financial requirements under phasing (b)						Million
	Alternative	2001	2002	2003	2004	2005	Total
	I (5–9 yrs)	7224	7611	9133	9693	11243	44904
	II (6–10 yrs)	6740	7413	8340	9438	10946	42877

Question No. 2

- (a) Because the number of students in the system in year 2006 is the same under both phasings (90 percent of 5–9 years old).
- (b) Because the number of students in the system in year 2006 is the same under both phasings (90 percent of 6–10 years old).

Question No. 3

- (a) Phasing (b) because the acceleration is more gradual; 3 percent in first year, 4 percent in second and so on rising to 10 percent in the last year.
- (b) Alternative I because a sudden change in primary age group may cause too much confusion and may increase parental reluctance to send older children to school rather than to work on field. The saving may not be worthwhile.

Question No. 4

- (a) Annual cost of educating a student in urban primary school is Rs. 723.
- (b) Annual cost of educating a student in rural secondary schools is Rs. 2905.
- (c) Annual cost of educating a student in urban secondary schools is Rs. 3346.

ADDITIONAL READING

1. Y Dror: Public Policy-making Re-examined, Scranton, penn., Chandler, 1968. Part V (on improving public policy-making).
2. V.L Renwick and L.J. Ingham (ed.) Educational Planning in New Zealand, Wellington Government Printer, 1974 (papers by L. V. Castle, L. J. Ingham and G.A. Vignaux).
3. J.D. Chesswas: Methodologies of Educational Planning for Developing Countries, Paris, IIEP 1969 (pages 38-79).
4. E. Schiefelbein and Russel G. Davis: Development of Educational Planning Models and Application in the Chilean School Reform, Lexington, Mass, Lexington, 1974 (pages 1-42).

Unit-5

ESTABLISHING PRIORITIES IN THE PROCESS OF EDUCATIONAL PLANNING

**(Through Cost Benefit Analysis)
(Adapted from UNESCO Material)**

Revised by:
Mrs. Rashida Parvez
Reviewed by:
Dr. Hamid Khan Niazi

CONTENTS

S.No	Description	Page No.
	Introduction.....	88
	Objectives.....	89
1.	Importance of Strategy Building.....	90
1.1	Setting of Targets.....	90
1.2	Choice of Priorities	90
1.3	Making of Assumptions	90
1.4	At all level of Educational Planning	90
2.	Areas of Choice.....	91
2.1	The Choice Between the Level of Education	91
2.2	The Choice Between Quality and Numbers	91
2.3	Sciences and Technology Versus the Liberal Arts.....	91
2.4	Formal Education Versus Non-Formal Education.....	92
2.5	The Choice of Incentives.....	93
2.6	The Purpose of Education.....	93
3.	Meeting the Needs and Demands for Education: A Model.....	94
3.1	The Priorities of Manpower Needs	94
i)	The First Priority	94
ii)	The Second Priority.....	94
iii)	The Third Priority.....	94
iv)	The Fourth Priority	94
v)	The Fifth Priority.....	94
vi)	The Sixth Priority	94
vii)	The Seventh Priority	95
viii)	The Eight Priority	95
3.2	The Educational Priorities	95
3.3	Needs Demand and Supply.....	96
4.	Establishing Priorities through Cost-Benefit Analysis	99
4.1	Cost-Benefits Analysis.....	99
4.2	Purpose of CBA.....	99
4.3	Variety of Possible Projects.....	99
4.4	Project A.....	99
a)	Opening of More Primary Schools	99
b)	Scope and Cost of the Project.....	99
c)	Expected Benefits.....	100
4.5	Project B.....	100
a)	Starting Evening Shifts in Existing Primary Schools	100

b)	Scope and Cost of the Projects	100
c)	Expected Benefits	100
4.6	Project C	100
a)	Opening of Mosque Schools in Village	100
b)	Scope and Cost of the Project.....	100
c)	Expected Benefits	100
4.7	Project D.....	100
a)	Increasing the Enrolment Capacity of Existing Schools.....	100
b)	Scope and Cost of the Project.....	100
c)	Expected Benefits	100
4.8	Assessment of Projects.....	102
5.	Priorities between Projects with Different Objectives.....	103
	Cost-Benefit-Analysis Proper	103
5.1	Cost-Benefit Analysis	103
5.2	Individual VS Societal Choices	104
5.3	The Measurement of Costs	104
5.4	The Measurement of Benefits.....	105
6.	Educational Cost-Benefit Analysis.....	106
6.1	Context	106
6.2	Background.....	106
6.3	Application to Education.....	106
6.4	Estimating Costs	107
6.5	Benefits from Education.....	107
6.6	Technical Problems.....	108
6.7	Results.....	108
6.8	Application to Pakistan	109
7.	Conclusion	110
	Self-Assessment Exercise	111
	Recommended Readings.....	112

INTRODUCTION

The word planning is an essential ingredient or input into the realization of meaningful educational development and growth. Many scholars have attempted to define the concept. Branch and Robinson (1988) believed that planning is a deliberate, organized, continuous process of identifying different elements and aspects of organism, determining their present state and interaction, projecting them in concert through a period of future time and formulating and programming a set of actions to attain desired results.

Longe (2003) define planning as the process of establishing priorities for future actions in an attempt to solve economic problems that stem from the existence of scarce resources.

Planning, therefore involves giving thoughts to the goals, aspirations and priorities of an individual, institution, society and even nation.

Planning looks at tomorrow which could be years to come, ensures that paper work is translated into reality; and this is when stated objectives and goals will be realized. It does not engage in the writing of resources. It optimizes the use of available resources to achieve the best result. Planning involves setting of goals and ensuring the realization of the set goals. Once the originally set goals are achieved, higher goals are set.

Educational planning is a process of preparing a set of decisions about the educational enterprise in such a way that the goals and purpose of education will be sufficiently realized in future with the available resources. Education planning involves obtaining and analyzing statistics and discussing them to make projections for future educational development especially of human, physical, and financial resources that are needed to achieve proposed objectives. Enhancing educational growth, development, efficient and effective allocation of human, material, financial, time and other resources in education and educational system. Socio-Economic and political growth and development are objectives of educational planning.

When we consider the various kinds of educational planning which are in use today we can distinguish three main types:

The *first* is the planning with adequate facts, backed by rather voluminous statistics. This type of planning is the most desirable, but it is the one least likely to be carried into effect simply because in practice, the necessary facts and statistical data are seldom available in developing countries.

The *second* type of planning can be defined as 'Planning Without Facts' because it corresponds to a very realistic type of planning. In many cases, it is simply impossible to ascertain all the facts ideally necessary for project planning.

The *third* type is planning without purpose or planning for the sake of planning. Unfortunately there is a good deal of such planning going on today, particularly the kind which makes use of the more questionable techniques of highly theoretical mathematical models and in which the basic objectives get lost in a display of methodological frameworks.

OBJECTIVES

When you have intensively gone through this unit, you should be able to:

- 7 Understand the importance of strategy building as a fundamental principle to the process of planning;
- 8 Understand the areas of choice in the development of Education;
- 9 Know the order of priorities determined for increasing certain categories of manpower;
- 10 Assess the priorities in education;
- 11 Understand how the Cost Benefit Analysis contributes to determine the priorities between educational programmes and projects; and

Say in what manner Cost Benefit Analysis measures the cost and benefits of an educational project.

1. IMPORTANCE OF STRATEGY BUILDING

1.1 Setting of Targets

But whatever planning is used, whether it be with or without facts, the importance of strategy building is fundamental to the process. In the context of educational planning, this involves, first the setting of targets. This means not projections and most emphatically not forecasts, but the imparting of *directions* which are to govern subsequent actions. The targets can, certainly be modified from time to time in accordance with experience gained in the course of planning process.

1.2 Choice of Priorities

Reaching the targets implies a plan, a programme for action based upon a choice of priorities. Priorities are then the second vital element in strategy building. No country can have all the education which it thinks necessary or desirable. Rather any country must promote or emphasize programmes which have high priority and discard or tone down programmes which have low priority.

1.3 Making of Assumptions

Strategy building thus involves the making of assumptions which may only sometimes be correct and which often must be based on initiative judgments. It involves, above all, the making of choices, sometimes very difficult choices and planners particularly educational planners often fail to realize that the choice of one objective implies the rejection of others.

If you choose to put your resources into one area, you thereby choose not to put them in other areas.

1.4 At all level of Education Planning

As we have seen in the previous unit that educational planning must establish priorities among the virtually unlimited range of future needs and must translate lofty and ambitious goals into concrete plan targets. The need to determine priorities pervades all levels at which educational planning is undertaken.

1.5 On the most global scale education itself must be given proper priority in the national budget. It must prove its worth and permit a critical look at its costs in comparison with such other agents of national development as agriculture, roads, communication, improves system of health care, industrialization and so on.

2. AREAS OF CHOICE

As far as educational development is concerned six such critical areas of choice will be outlined here:

2.1 The Choice between the Levels of Education

The first choice is between the levels of education. What emphasis should be placed on primary, secondary and higher education when making investments in education?

You can give top priority to universal primary education but only at the expense of secondary and higher education or top priority can be given to secondary education, second priority to primary education and third priority to higher education but you cannot give top priority simultaneously to primary, secondary and higher education. No strategy of educational planning is complete until this choice has been made.

2.2 The Choice between Quality and Numbers

The second and even more fundamental choice is that between quality and numbers. Which is to be emphasized? In the field of primary education, for instance, do you aim at compulsory universal schooling, education, with few textbooks, poor teaching methods and teachers who will necessarily have very low qualifications? Or do you want well-qualified teachers better teaching methods? If you choose the second alternative, economic necessities may focus you to sacrifice numbers in order to achieve quality that is to sacrifice the ideal of universal primary education.

There is a difference between quality and numbers arises throughout the whole educational system. In Allama Iqbal Open University of Pakistan, for instance, with some notable exceptions have part-time professors, part-time students and poorly equipped libraries and laboratories because not enough money is spent on part-time teachers and equipment.

This University provides inexpensive education, mass education, which may at this stage of its development, be the right kind for Pakistan, but there is another kind of education; which emphasizes excellence and high standard, full time teachers and students well equipped laboratories and libraries. The question is what kind of balance do you strike between these two types of higher education, since you cannot have both numbers and quality? The glamour for higher education has become so great and so general that politically it has become almost imperative to sacrifice quality to numbers.

2.3 Science and Technology versus the Liberal Arts

The third choice, more particularly in the field of higher education concerns the balance between science and technology on the one hand and the liberal arts on the other. What proportion of your students should attend science and engineering faculties, and what proportion should study the arts, humanities and law? This is not a question of

intrinsic value of these subjects, but rather one of the practical needs of the country. If you decide to increase the number of science and engineering students you are immediately faced with a thorny financial and political problem. Education in science and engineering costs roughly four times more per students than education in arts, humanities and law. Financial necessities may therefore compel you to balance any expansion in science and engineering studies by a fourfold contraction of liberal arts studies.

In fact the choice between science and technology and the liberal arts becomes to some extent a choice between quality and numbers. By and large the lowest quality education is in law, humanities and arts, because they lend themselves to the use of large classes and employment of 'taxi' teachers. Science and engineering however, require much higher standard of teaching more expensive facilities and many more full time teachers. In the non communist world about 25 percent of the student body is enrolled at science and engineering faculties and in communist countries the proportion varies between 40-45 percent. Of all the countries Pakistan has the lowest proportion of students in science and engineering somewhere around 15 percent. The educational planner must keep such figures in mind when deciding on the proper balance between scientific education.

2.4 Formal Education versus Non-Formal Education

The fourth area of choice lies in the relative emphasis upon formal education that is education before employment, and training by employing institutions or on the job training. This problem becomes particularly acute at the craftsman level. It has been amply demonstrated that pre-employment training of craftsman in secondary vocational school is a poor investment in most countries. It is far more advantageous to provide potential craftsmen with general secondary education and then develop their skill on the job. In other words, formal pre-employment education should aim at forming trainable people, while the task of developing specific skills should be the responsibility of employers both public and private.

In some Latin American countries, an interesting arrangement has been worked out. Columbia, for instance, has a system of training related to employment in industry which is financed by a payroll tax in all employers who employ ten people or more. The funds thus provided support a training organization called SENA, completely independent of the Ministry of Education, which trains those who are employed or to be employed in the various industries. Similar arrangements exist in Venezuela, Brazil and in Pakistan.

Shifting the job of training to the shoulders of employers makes more funds available for formal general education. However, the choice between pre-employment vocational education and training on the job is always a difficult one, and the balance between the two is struck differently in different countries.

2.5 The Choice of Incentives

The fifth area of choice is of great importance to the general planner as well as to the educational planner is that of incentives. To get people in to certain occupations, do you rely on the free play of the market or do you provide incentives and manipulate them constantly as the situation demands so as to create differential salary scales and raise the financial rewards and status of particular types of jobs? This is a vital and very difficult problem in many countries. In Iran, for example, the proportion of doctors to nurses is 10 to 1 where it should be about 1 to 10. The reason is that the salary and status of nurses are so low that nobody wants to enter the nursing profession. Similar considerations apply to technicians, engineering assistants and agriculture assistants in many countries like Pakistan. As a result it is often more important for the educational system to produce more nurses rather than doctors, or engineering and agricultural assistants rather than graduate engineers and agronomists.

Confronted with a situation of this kind you can have the differentials in pay and status as they are, or you can work out a new system of remuneration which rewards the technician willing to dirty his hands in the factory as much as the graduate engineer who refuses to budget from his office and the medical technician who goes in to the bush to treat people with antibiotics and promote measures of public health as much as the doctor who refuses to move out of the urban centre. These are difficult choices to make but unless they are made thoughtfully, great amounts of money will be wasted. The study of incentives is an integral and indispensable part of educational planning and a planner who ignores the incentive structure of his society is like an ostrich hiding his head in the sand.

2.6 The Purpose of Education

The sixth and last area of choice is concerned with the very purpose of education. Should education aim at satisfying the needs, desires and hopes of individuals or should it be directed towards meeting the needs of the state?

Countries professing the so called liberal philosophy would naturally favour the first alternative and those professions the communist philosophy would choose the second, but the problem is not so simple in the new developing countries. For example, there is a net export of doctors, scientists and engineers from the developing countries like India, Pakistan and Bangla Desh to the highly developed countries. Given the urgent needs of these developing countries for high level manpower, is this freedom of choice a good thing? This is a question which every developing country and every planner must answer individually, but this is not a question that can be avoided.

The essence of strategy building is thus the making of choices in the six critical problem areas described above, and it is difficult to make these choices wisely as to strike the proper balance between priorities and so promote the social and political as well as the economic goals of the country.

3. MEETING THE NEEDS AND DEMANDS FOR EDUCATION: A MODEL

It is convenient to take an imaginary country as a model since you can express yourself freely and can reveal a few truths of practical relevance.

3.1 The Priorities of Manpower Needs

It is assumed that a manpower assessment, quantitative or qualitative, has been made for that country and as a result an order of priorities determined for increasing certain categories of manpower to meet social, political and economic goals:

- i) *The first priority* seems to be an increase in the number of technicians and sub-professional personnel, industrial development calls for engineering assistants and senior foremen. Land reforms, which is to be carried out requires a large number of agriculture technicians, not agnostics, to carry the ideas to the farmer. The state of the hospitals and health services makes it imperative to have many more nurses and medical technicians. This is then the category of manpower most urgently needed and requiring the greatest proportional increase.
- ii) *The second Priority* in this particular country is an increase in the number of teachers at all levels, but especially teachers of science and engineering in universities. There is also critical shortage of mathematics and science teachers in secondary schools.
- iii) *The third priority* must be given to graduate engineers and scientists. The progress of industry requires an expansion in research and development facilities, and agriculture, if it is to be developed according to plans, needs more soil scientists and agricultural engineers. There is also a need for the soft headed scientists, the economists and sociologists, because the country under discussion has a planning organization and must deal with economic and social problems of development.
- iv) *The fourth priority* is the provision of managerial and executive personnel. All countries need more personnel at this level, and though managers and executives are not necessarily trained in universities as such, they can be drawn from other professional sectors. It is assumed therefore that a certain proportion of graduates, engineers, lawyers will eventually become managers, mostly by training on the job in private enterprises or in government services.
- v) *The fifth priority* relates to clerical and secretarial personnel, of which there is a shortage in this particular country.
- vi) *The sixth priority* must be given to craftsmen. Here the shortage is very great, but it is recognized that consequently great needs can best met by training on the job, rather than the creation of specialized pre-employment vocational training centres.

- vii) *Seventh in our order of priority are medical practitioners. Perhaps more doctors are needed, but the more severe problem is that the doctors at present available cannot be utilized to best advantage without a substantial increase in the number of sub-professional personnel, nurses and medical technicians. Moreover, in this particular country, the number of doctors is very high compared to other professions, because doctors enjoy high earnings and status.*
- viii) *Last on the list are lawyers, those much maligned men, who find it difficult to get jobs in this country and are literally a drag on the market, though their country may need legal men of higher capacity and more unusual merit.*

3.2 The Educational Priorities

In this instance the educational planner will give highest priority to secondary general education on a free basis because there are relatively few places in existing secondary schools, and their high fees constitute a financial and social bottleneck, a barrier to general higher education.

The second priority will be given naturally to sub-professional and technical education.

The third priority will be given to the teacher training also at the sub-professional level.

The fourth priority will be given to the expansion of higher studies in science and engineering to raise the proportion of students in these two fields from 15 percent to 20 percent or even 25 percent.

Fifth in the order of priority will be general adult education or basic education because the population is largely illiterate and some kind of education is indispensable for successfully carrying out land reform and bringing the mass of the people into the age of modernization. Primary education is next, followed by higher medical education and finally, per-employment vocational schools.

The manpower survey of this country has stressed the importance of non-formal education, out of school training and training on the job. This includes part time courses for those preparing for, or now in, managerial and exclusive jobs. Training of craftsmen, perhaps along lines followed by the AIOU, in Pakistan and in connection with land reform, massive programmes of farmer training by agricultural services. Moreover, because of the rapid pace of technological development, old skills become obsolete, and there is need for continuous retraining programme. As John Gardner wrote recently that:

“There should be provision made so that individuals have the capacity for continual self-renewal as they perform and grown on their job.”

With the help of this table we will consider the needs, the demand and supply with regard to the various categories of manpower discussed above.

Occupation	Need	Demand	Supply	Facilities	Reasons
Technicians and sub-professional people	Very large	Very small	Very small		Low status and pay; few opportunities for advancement
Teachers	Very large	Small	Small		Low status and salary
Scientist and engineers	Large	Large	Very small		High status and pay, but high education costs
Managers and executives					
Clerical and secretarial	Large	Large	Small		Escape from drudgery for women
Craftsmen	Large				
Doctors	Small	Very large	Very large		High status and income
Lawyers	Very small	Very large	Very large		High status; overflow from other faculties.

3.3 Needs, Demand and Supply

First of all, a clear distinction must be made between needs and demand in the context of manpower studies and education.

3.3.1 Needs are determined by the manpower assessment and represent the country's manpower or educational requirements to meet specific social, political and economic goals.

3.3.2 Demands reflects individual desires to prepare for a particular profession or trade, the desires for given types of education. There is no necessary connection between the two, because needs and demand can diverge vary widely.

3.3.3 In fact, the first row in this table shows that whereas the need for technicians and sub-professional personnel is very large, the demand for this type of education is very small. Consequently, the supply is also very small. The reason is that in this particular country no one wants to be a sub-professional because such people have low pay, low status and very limited possibilities for advancement. The educational planner's recommendation of larger facilities for the training of technicians and sub-professionals would be irresponsible, because these facilities would not be utilized. For example, in Nigeria by far the most critical need was for sub-professional personnel in agriculture, but when new facilities for training such people were made available, it was impossible to fill more than a quarter of the places, because there was no incentive to enter into this particular occupation. In such a case, the planner must first tackle the problem of incentives.

3.3.4 In the next row, it is clear that the need for teacher is very large, but the demand is small, again because of their low salary and status and therefore, the supply is also small. Here the planner must somehow increase the attractiveness of the

teaching profession, at least in the most critical sectors. Only after that can he think of increasing the supply of teachers by putting more money into teacher training institutions.

- 3.3.5 Where engineers and scientists are concerned the need is large, though not as large as for technicians and sub-professional personnel, and here the demand is also large because of the relatively higher status and pay of this category of professionals. However, the supply of this kind of education is very small because it is expensive. Here the educational planner need not worry about incentives; with the great need and demand, the obvious course is to expand the number of places, but the obvious difficulty is the high cost of scientific and engineering education.
- 3.3.6 The case of managers and executives illustrates the drawback of a chart; not everything fits into it. It has been shown that pre-employment business schools are not suitable for developing countries because they tend to turn out clerks rather than manager. What is really needed is inservice training and manager development programmes for engineers, lawyers and liberal art, graduates, for people from all ranks who want and are able to become managers and executives. Managerial training is not specifically a job for the educational system, though the system should turn out people sufficiently qualified to become managers after suitable training. This is one of those happy situations in which the educational planner can say that the solution lies outside the formal educational system, though not necessarily outside the planners province.
- 3.3.7 In the category of secretarial and clerical personnel, the need is large, and the demand is large for this kind of education because it provides a good chance, for women especially to escape from the drudgery of the rural home to the glamour of the urban office. However, the facilities for training are small, and training of the job is not very suitable for this kind of personnel. Here then is a good area in which to expand secondary vocationally oriented education. Craftsmen for whom the need is large, from another group that does not fit well into this chart because, like the managerial group, it does not fit well into the formal educational system.
- 3.3.8 The need for doctors is very small because the country has always produced a very large proportion of doctors; the demand for and the supply of medical education are both large because of the high status and earning of medical practitioners. Here the educational planer faces a very difficult political problem indeed. If he recommends a cut in medical school funds in favour of say the engineering schools which are needed much more, he will ensure the enmity of powerful social groups may find himself and his plan in great trouble.
- 3.3.9 Finally the need for lawyers is very small but the demand for legal education is very high and so is the supply. This also applies to graduates in the liberal arts. In this particular country, people who seek high status, but cannot get into medical

school or have not the brain to follow scientific or engineering studies, go in for the law and liberal arts. The political pressures in this area are even stronger than in the case of doctors, and our political planner may well conclude that he simply cannot solve the dilemma. A planner who publicly declared that a certain Latin American law Faculty should be cut to half its size provoked a strike of all students of that University and in Latin America students and recent alumni exert great influence in University councils. The solution lies perhaps in developing new incentives and attitudes but this is by no means an easy task.

This exercise in manpower categories be repeated with regard to levels of education.

3.3.10 Priorities have to be established between the main levels and types of education. Given the constraints of time, men and money what relative emphasis should the educational planner accord to the expansions and improvement of primary as opposed to secondary and higher education? What priority should the area of non-formal and adult education receive?

3.3.11 Then with these strategies priorities determined, comes the arduous task of deciding on priority programmes and projects within each level and type of education. In secondary education for example, should we pursue the strategic goal of a more work oriented education by opening up more technical vocational schools, or develop a more vocationlised curriculum for all secondary schools? In adult education are literary courses of employment oriented training programmes the wiser choice? In teacher training, is better teaching equipment or refresher training for master teachers the more urgent projects? At all these levels, priorities have to be established and hard choices have to be made. In so doing educational planner can no longer bank on institution and experience alone. Education has grown into an extremely complex and costly enterprise which can less than ever afford thoughtless investments and wrongly chosen thrusts.

Objective and rational decision making techniques must be employed whenever possible. Cost benefit analysis is one of such techniques.

4. ESTABLISHING PRIORITIES THROUGH COST-BENEFIT ANALYSIS

4.1 The Logic of CBA is perhaps best illustrated in these words:

“Cost-Benefit Analysis (CBA) systematically compares the costs and expected benefits of each of number of competing strategies, programmes and projects. By assessing their economic profitability, it gives the planner an important yardstick to determine priorities rationally rather than by intuition.”

Suppose the planner has to establish priorities among several projects, all of which tend to meet the same kind of objectives. His task of weighing the respective costs and benefits will in this instance be much easier than if he were to compare projects whose objectives are entirely different.

4.2 Cost Benefit Analysis (CBA) is a systematic process for calculating and comparing benefits and cost of project, decision or government policy.

Purpose:

- (i) To determine if it is a sound investment/decision justification/feasibility)
- (ii) To provide a basis for comparing project it involves comparing the total expected cost of each option against the total expected benefits to whether the benefits outweigh the cost and by how much? CBA Analysis has cost in both the numerator and denominator.

4.3 Let us see how CBA can be applied to the following case:

The government of Pakistan has recently attached the highest priority to the universalization of primary education. It means that we want to have all the children in the primary age-group (6–11) to be in schools. There is variety of possible projects which can be formulated to serve this purpose. The planning wing of the Ministry of Education is charged with the responsibility of electing a particular project for which relationship between costs and benefits is optimal. In view of the practical problems and financial constraints the following projects can be considered.

4.4 Project A

(a) Opening of More Primary Schools

It is conceived that in certain regions of the country the primary schools are not properly located. The children have to walk long distance for reaching the nearest primary schools. If more schools are opened near their homes the tendency to send the children to schools shall increase.

(b) Scope and Cost of the Project

200 primary schools will be opened each year. The total cost over period of five years shall come to Rs. 300 millions.

(c) **Expected Benefits**

It is expected that one million additional students will be enrolled during the plan period.

4.5 Project B

(a) **Starting Evening shifts in Existing Primary Schools**

It may be thought that some of the parents cannot afford to send their children to schools as the children are required to work in the morning for ameliorating the family income. If evening shift is started in the existing primary schools some of the parents may find it easier to send their children to schools.

(b) **Scope and Cost of the Projects**

Over the period of five years evening shifts will be started in 8000 primary schools. The total expenditure shall come to Rs. 800 millions.

(c) **Expected Benefits**

Over the period of five years the enrolment shall increase by 0.8 million.

4.6 Project C

(a) **Opening of Mosque Schools in Village Mosque**

One of the reasons for aversion of the parents to send their children to school lies in our tradition. During the British rule the Muslims had developed tendency to keep themselves away from the alien type of education. Suppose that this has been identified as one of the reasons for low enrolment. It is therefore conceived that if mosques are used for elementary education with religious education combined with it the enrolment shall increase.

(b) **Scope and Cost of the Projects**

10,000 mosque schools shall be opened over the period of five years. The total costs shall come to Rs. 280 Millions.

(c) **Expected Benefits**

Over the period of five years the enrolment shall increase by one million.

4.7 Project D

(a) **Increasing the Enrolment Capacity of Existing Schools**

It can also be argued that by increasing the intake capacity of the existing schools, the enrolment shall increase. A project seeking to increase the capacity of existing primary schools by adding one or two rooms to each primary school can be conceived and launched.

(b) **Scope and Cost of the Projects**

20,000 new rooms will have to be constructed over a period of five years. The total cost at the current scale shall come to Rs. 160 millions.

(c) **Expected Benefits**

Over the period of five years the enrolment shall increase by one 0.8 million (40 students per room)

In summary the costs and expected benefits of all the four suggested projects are as follows:

Cost and benefit of various programmes for the universalization of primary education.

Project	Cost	Benefits (increase in enrolment)	Benefit per 10,000 rupees
A	300 millions	One million	30
B	800 millions	0.8 million	8
C	280 millions	One million	36
D	160 millions	0.8 million	50

The total programme for universalization of primary education shall cost Rs. One billion and 54 million over a period of five years and it is expected that about 3.6 million students who should have otherwise remained out of schools shall get enrolled. The Ministry of Education presents this programme to the Planning Commission and the Ministry of finance. These two organizations agree to allocate Rs. One billion for the entire programmes. What are now the options for educational planner? There may be two alternatives (a) he may drop some of the projects and implement others in full; (b) he may reduce the scale of all the projects.

What should be the criteria for marking out the projects to be completely dropped or to be reduced in scale? Logically the criterion of selection should be based on the contribution that each project makes to the achievement of the objectives of the programme. This achievement is to be measured in terms of per unit of costs or inputs. That is to say that if by spending Rs. 10,000 in programme A, we can increase the enrolment by 30 and by spending the same amount in programme C we increase the enrolment by 36, programme C will be more effective than the programme A. This contribution is measured through the cost benefit ratio. The formula is as under:

Formula for benefit cost ratio:

Benefit Cost Ratio	Total amount of expected benefit
Project	Total cost of the project

- Note: (1) The above formula can only be used if the benefits of the project can be monetized (quantified in terms of money).
- (2) In social sectors, the monetization of project benefits is extremely difficult and can only be done through highly involved processes.
- (3) Only if the benefit-cost ratio is greater than investment in the project advisable on purely economic considerations.

4.8 Assessment of Projects

In our example, project B is the least effective and needs to be dropped altogether. Project D is the most effective project and the projects A & C are almost equally effective. These two projects shall carry equal weight while determining priority.

Without project B, the rest of the programme shall cost Rs. 710 millions, which is less than the allocation made by the Ministry of Finance and Planning Commission. The educational planner can either expand all the projects proportionately or divert the total additional funds from all other projects and expand project D 6 times, as it promises the maximum benefits at minimum costs. Now the question arises which one of the above two decisions shall be correct.

4.9 The second choice of discarding all the rest of projects in favour of project D is totally wrong. This project aims at increasing accommodation of existing primary schools by increasing one or two new rooms to each school. It may happen that many of the schools already have extra capacity and beyond certain number increase in accommodation is not required. Secondly, accommodation of only those schools needs to be increased where the schools are forced to refuse admission for want of accommodation. In other cases where no such problem exists, increasing the accommodation shall not serve any purpose and the project shall lose its effectiveness. Either one of the first two may be appropriate choice, depending upon further consideration that how much increase in scale can the project absorb, without diminishing their effectiveness.

If project D can absorb all the additional investment, without lowering its effectiveness, this first choice will be to divert the entire additional amount to this project. If this is not the case the increase in the scale of each project will have to be considered on the basis that the increased investment does not diminish the benefits.

In general before any project is to be cut down or expanded in scale, a careful investigation into the effectiveness of the project at its new scale is called for. Cost-benefit ratio normally varies with the size of the project.

4.10 The exercise we have just concluded highlights the logic of cost-benefit analysis (but not the actual use of the benefit cost ratio). The exercise has rather simplified facts for the sake of bringing out the logic of benefit-cost analysis. In fact, the term “cost-effectiveness analysis” is often used to distinguish this from the much more complicated case where priorities have to be determined among projects, programmes or whole plans with seemingly quite different objectives.

4.11 In the above example, the criterion for project selection was the contribution each of them made to achieving the overall programme objective i.e. universalisation of primary education per unit of the input each project would consume. It should be noted that the exercise required the objectives of all four projects not only to be the same, but also to be expressed in measurable terms. The concrete result expected from each project had, therefore, to be indicated very clearly a requirement which in reality may present the greatest difficulty.

Furthermore, cost effectiveness-analysis as in our example requires that projects have only one major objective. If, for example, besides universalization (objective 1) the planner were also asked to speed up educational progress in backward area (objective 2) he may have to decide to retain less effective projects from the point of view of universalization because they may have a specific impact on backward area.

5. PRIORITIES BETWEEN PROJECTS WITH DIFFERENT OBJECTIVES COST-BENEFIT ANALYSIS PROPER

While priorities among projects with one and the same overarching objective may not always be easy to establish, the problems encountered will, by no means, be insurmountable. But soon the planner is bound to find a much bigger stumbling block in his way: how can he assess the costs and benefits of projects with vastly different objectives? How to determine priorities between larger programmes, aimed at different clienteles, addressed to a variety of learning needs, many of them supposed to serve a diverse set of educational objectives at a time? Are we not trying to compare the incomparable?

5.1 Cost Benefit Analysis:-

This is where Benefit Cost Analysis steps in by offering a common denominator which will enable comparison and choice even between projects with, at first glance, very different objectives. The cost-benefit-analyst will argue as follows: "I admit your adult education project and my plan to put up 5 new technical colleges seem world apart. It's not easy to decide which of the two deserves priority. But there is one thing they do have in common. Both try to enhance the earning capacity of their respective graduates, and both seek to strengthen the economic productivity of our people. Let us see which of the two projects is likely to be more effective in that respect, and we have a solid yardstick to settle the question of priorities."

The measurable economic benefits of any educational project, on which cost benefit-analysis solely-concentrates, provide a common denominator for objective choice between alternative educational projects, programmes or plans.

Thus, benefit-cost of focused only on measurable economic benefits of education. But hits are not to deny that education generates other non economic analysis benefits as

well. Some of those may be more of an “investment”, others more of a “consumption” type. Some accrue in the social and cultural realms, others may be of essentially political nature and still others may be felt by the individual only. Seen from the educational planner’s angle, an educational plan has many objectives, and improved economic performance may not necessarily be the most important one. Therefore, while CBA can be an important element in decision-making, it takes only some of the relevant factors into account, and can never replace the planner’s independent final judgment.

5.2 Individual Vs Societal Choices

CBA is being presented in this unit as an analytical tool for educational planners to be used in determining priorities between alternative projects. In making such choices the ultimate interest, planners will have in mind, is the well being and progress of society. CBA in other words can serve as a tool for societal decision making.

But the costs and benefits of educational projects or programmes can also be assessed from the viewpoint of a private individual. Question such as whether to join a certain specialized stream of education, or whether not to enter a university, present individuals with choice problems of tremendous significance. Just like the educational planner, the individual will weigh the costs and benefits of each alternative, but he will do so from an entirely different point of view. What governs his choice are his own individual interests, not those of his society. CBA, therefore, can also provide a tool for individual decision-making.

The actual differences between CBA in social and in individual decision-making will become clear as we discuss below the question of how costs and benefits are to be measured. Evidently, what counts as costs for the society may not be costs for the individual at all, and certain benefits may accrue to the society which the individual does not register. One important observation follows from this: the educational choices made by individuals according to their own rationale, and the choices made by planners which are embodied in the educational plan, may often be inconsistent.

The logic of CBA can be applied to social as well as to individual decision-making in education. However, society and individuals are likely to have different notions of costs and benefits. This can result in a miss-match of societal and individual priorities in educational matters.

5.3 The Measurement of Costs

The measurement of costs of education, for purposes of CBA involves more than a simple calculation of money expenditures. It requires an estimate of the total cost of a particular educational choice, in terms of alternative opportunities foregone either by society, or by the private individual.

From the educational planner’s point of view, the relevant cost concept is the total resource cost to the economy of the particular project or programme under consideration. This includes the recurrent cost on salaries and other recurrent items; it includes an estimate

of the annual amortization of buildings over their expected life-span; it finally includes the opportunity costs of student's time who, by joining this particular educational programme, forego the chance to enter the labour force now and to contribute to production.

From the individual's point of view, fees and the cost of books, school uniforms, transport, etc., are the most obvious cost elements. If students receive scholarship, their value must be deducted from the costs of fees. Opportunity costs are, of course, another cost element as the individual is likely to think twice before sacrificing his chance to immediately earn an income rather than invest unpaid time into more education.

The process of prepayment of loan and annual interest on the unpaid balance in a number of equal annual installments. Thus if a building, expected to last for 40 years, is constructed at a cost of Rs. 10.0 million the planner would take into account 40 equal installments that would recover the amount plus annual interest (at prevalent rate) on unpaid balance.

5.4 The Measurement of Benefits

The planner, from a social viewpoint, is interested in the likely economic benefits that will accrue to society as a result of a particular educational project or programme. He will look beyond the immediate programme objectives (e.g., turning out so and so many graduates with a particular type of qualification) to the economic contribution these people will ultimately make to the national product.

The economic benefit expected from a particular educational programme is given by the additional life time earnings of a person who undergoes that programme over the life time earning of a person who does not enroll in that programme.

Note: Compare the life-time earnings of doctor and an ordinary graduate in social science. Restrict your comparison to the job that the difference you will find the measurable benefits of the degree in medicine.

The same indicator-additional lifetime earnings will also be used by an individual considering whether or not to take up a certain educational programme. The only technical difference is that the planner will be interested in earning before taxation, whereas the individual will make earnings after taxation the basis for his calculation.

How can future lifetime earnings be estimated? The standard method used in CBA is to use cross-sectional data to determine typical age-education-earnings profiles for workers of different age and with different educational backgrounds. Admittedly, this method reflects today's income and labour market conditions instead of future ones; it is a poor substitute for what the planner would really like to know, but it seems to be the only practical solution.

6. EDUCATIONAL COST-BENEFIT ANALYSIS

6.1 Context

Educational cost-benefit analysis needs to be seen in the context of educational planning. Worldwide, as education systems grew and become more complex, there is an increasing need to utilize more sophisticated methods of educational planning and to search for rational and systematic tools to aid educational policy decisions.

Educational Cost-benefit Analysis has been one of the three main approaches used in different countries in connection with the development of educational systems, which have been:

- (i) Education Cost-benefit Analysis
- (ii) The Manpower Planning (or Manpower Requirements) Approach
- (iii) Social Demand

To these three, many economists would now add, even though it is qualitatively different, a fourth:

- (iv) Input-output Analysis

We may note in passing that the use of each of (ii), (iii) and (iv) poses problems.

6.2 Background

Cost-benefit Analysis originated, in fields other than education, around the turn of the twentieth century but did not develop on a large-scale basis until the 1950s. At that time, water resource projects, such as the construction of a dam, evidently had such major ramifications over a wide area relating to, and all the benefits stemming from, the project, in a large and complex sum.

If the benefits (which would accrue over many years in the future), could be expressed as an annual percentage return on the costs (which were largely incurred whilst the project was being constructed), then the resulting “rate of return” could be compared with rate of return available from possible alternative forms of expenditure. Thus, rates of return are now routinely calculated in respect of, for example, the building of motorways, airports, or urban transport system, or in many other fields. A recent example was a cost-benefit study of a family planning programme, which showed the returns to be very high.

Note that “cost-benefit analysis” may also be referred to as “rate of return analysis”, but that the reverse is not necessarily true: rates of return can be calculated in ways other than via enumeration costs and benefits.

6.3 Application to Education

The origin of the Economics of Education as a field of study is usually taken to be the Presidential Address given by Professor Theodore Schultz to the American Economic Association in 1960, in which he appealed to his fellow economists to start to take seriously a field which, he said, had been sadly neglected by economists. Over the

ensuring 30 years or more, there has developed a very large output of work in this field, especially by economists in the USA, and by the 1990s it is not possible to doubt that many, perhaps most, educational policy decisions are now taken in the light of economic analysis and criteria and making use of methodologies developed by economists.

Foremost among such methodologies is educational cost-benefit analysis. The economists at the World Bank, for example, are in no doubt that Cost-benefit analysis is of greater relevance to educational policy decisions than any other methodology available.

6.4 Estimating Costs

Whilst estimating educational costs is never a simple or straight forward matter, it is certainly the easier side of the equation. Costs may be defined in a number of different ways and care must be taken to focus on the definition which is most appropriate to the analysis in question.

Recurrent costs are always dominated by salaries, especially teachers' salaries, and such data is usually readily available or can be computed without great difficulty. Capital costs (Development Costs) are more problematic since such costs have to be apportioned over the lifetime of the capital item, e.g., buildings in question, and this may be difficult to estimate. For example, in the UK public buildings such as schools are assumed to last for 40 years.

Other costs may be borne by families, e.g. for books or personal equipment. More importantly, whilst young people are in full-time education they cannot earn an income and the family loses or foregoes the income that would otherwise have been received. Such "income foregone" may be very large; indeed, it may be larger than all other educational costs. It is evidently a cost to the family. Is it also a cost to the country, i.e. to the society as a whole? This must depend on whether the young person would have been making a productive contribution to the national economy.

6.5 Benefits from Education

Large scale statistical studies by economists in the USA, especially Professor Becker, have demonstrated the close statistical relationship between level and type of education received and future income over the person's working life. Data relating income to age, often called "age-earnings profiles" are readily available in most countries and usually these can be stratified by the level of education received.

Thus we can predict, with near certainty, the future lifetime earnings of any group of graduates from the education system, e.g. from B.A. courses. Note that this is not true of individuals, but it is true of very large groups, e.g. whole national populations. Professor Becker's work also showed that, in comparing any two different groups, e.g. those who left education at F.A. level and those with B.A., two-thirds of the difference

between their respective lifetime earnings is statistically related to the education that was received. This “alpha-coefficient” has been widely accepted elsewhere.

This is how the “benefits” from education are measured. To do so involves assuming that a person’s income can be taken to measure his/her contribution to the national economy. Economic theory says that this should be so and it seems a relatively straightforward concept where the person is engaged in physical production, e.g. in a factory, but it is less easy to see in the case of, e.g. a nurse or a teacher.

Note that here we are only measuring the economic returns to education, and are ignoring others, e.g. cultural or aesthetic effects, which you may well feel are not unimportant.

6.6 Technical Problems

A number of technical problems arise in making such calculations of which the most important are:

- (i) On what basis to make the calculation of rate of return? There are four possibilities:
 - marginal private rate of return
 - marginal social rate of return
 - average private rate of return
 - average social rate of return
- (ii) Discounting over time: Since benefits occur in the future, they must be discounted (= reduced), by about the current annual rate of interest, to translate them into present day values. This greatly affects future values; e.g. the proposed third London airport was assumed to cease to exist in around the year 2050.
- (iii) Ideally we should use time-series data for incomes but we often have to use instead cross-section data. An upward adjustment may be required to allow for economic growth; Dr. Ziderman suggests 2 percent per annum.

6.7 Results

In almost all countries, the results of Educational Cost-benefit Analysis show the return to educational expenditure to be high, often very high, both from the point of view of the individual student and the point of view of the country. The main conclusion is that educational expenditure is very “profitable” and that it would greatly benefit the country, in terms of its future economic and social development, to increase the proportion of its Gross National Product devoted to education.

Further, in most countries,

- (i) the returns to primary education are higher than those to higher levels of education,
- (ii) the returns to education of women are high, and
- (iii) the returns to non-formal or distance-learning systems are high (especially there is no loss of income earned).

Thus, there would be economic benefits from relatively shifting educational expenditure towards primary education, towards the education of females, and towards non-formal or distance-learning system.

6.8 Applications to Pakistan

In the case of Pakistan, rather few educational cost benefit analysis seems to have been undertaken.

Possible future applications would include:

- the returns to primary education
- the returns to secondary education
- the returns to higher education
- the returns to teacher training
- the returns to education of females
- the returns to distance-learning, e.g. the AIOU

An article in “The Dawn”, Lahore, 9 March 1992, by Professor Shamash Kassim Lakha commented:

“Given the low standard of literacy in the country, Pakistan’s primary focus should be on improving basic education. The ratio of economic returns to primary education in most countries is almost twice as high as that for higher education. This in no way implies that investments in higher education are unimportant. Secondary and tertiary education could also be financed partially through increased user charges.

The World Bank Report of 1988 noted that perhaps the paramount issue facing education planners in Pakistan today is how to recruit, train, deploy and improve the quality of teachers in primary and secondary education.

The third strategy I have suggested for improving the status of education is through improved efficiencies.”

7. CONCLUSION

The possibilities of applying CBA, as a practical tool in educational planning are limited. It is strongest when used to determine priorities between projects that have basically the same objective. But when it comes to projects that aim at different objectives their priorities and priority ranking through CBA becomes decidedly more difficult. We should remember that CBA is only one of the many elements to be considered in establishing priorities between different educational objectives.

All this discussion leads to the conclusion which concerns the qualities an educational planner should have. First of all his knowledge must be very broadly based. If he does not know the techniques and objectives of general, social and economic development planning, he has no business planning the education. If he is prepared to wait for the economist to tell him what the needs of the country may be in terms of high level manpower, he openly acknowledge defeat, even before undertaking the job. The successful effective educational planner must be fully conversant with the needs of industrial and agricultural development. Know the problems of foreign exchange and those relating to the terms of trade, be able to integrate all these basic factors with human resource development and should never, under any circumstances, assume that he must be subordinate and subject to him and fancy of the general economic development planner.

SELF-ASSESSMENT EXERCISE

1. Distinguish between the three main types of planning.
2. What is the importance of strategy building in the process of planning.
3. List the six critical areas of choice in the development of education.
4. Discuss the area of choice between:
 - (a) the quality and number
 - (b) science and technology Vs liberal arts
 - (c) the purpose of education
5. Identify the priorities of manpower needs.
6. As an educational planner determine the order of educational priorities.
7. With the help of the table given in section 4.2 please consider critically the needs, the demand and supply of various categories of manpower.
8. Define the cost-benefit analysis and describe how this is applied to compare various projects.
9.
 - (a) How is the cost of education measured?
 - (b) How are the benefits from education measured?
10. Which technical problems can arise in calculating the rate of return.

ANSWER TO SELF-ASSESSMENT QUESTIONS

Self-Assessment Exercise 1

1. Section 1
2. Section 2
3. Section 3
4. Section 3
5. Section 4.1
6. Section 4.2
7. Section 4.3
8. Section 5
9. a) Section 6.3
10. b) Section 6.4
11. Section 7.6

RECOMMENDED READINGS

1. George Psacharopoulos and Maureen Woodhall, *Education for Development, An Analysis of Investment Choices*, A World Bank Publication, Oxford University Press USA, 1985.
2. Blaug Mark 1967, *A Cost Benefit Approach to Educational Planning in Developing Countries*, Washington DC World Bank.
3. Woodhall Maureen 1970, *Cost Benefit Analysis in Educational Planning*, IIEP Paris.
4. Harbison, *Educational Planning and Human Resource Development*, UNESCO IIEP., Paris, fundamental o Educational Planning Series No.3
5. JR Hough, *An Economist Looks at Education*, Loughborough University, 1974.
6. Adegbile B. ATES, *Essentials of Education Planning and Administration*.

Unit–6

PLANNING THE LOCATION OF SCHOOLS

Written by:

Mrs. Rashida Parvez

Revised by:

Dr. Hamid Khan Niazi

CONTENTS

S.No	Description	Page No.
	Introduction.....	115
	Objectives.....	116
1.	School Location	117
2.	Steps for School Location Planning	117
3.	The School Catchment Area.....	118
4.	Determinants of School-Mapping	120
5.	Determinants of Appropriate School Size.....	121
6.	Establishing Viable Education Institutions.....	123
7.	Extend Range of Schools by Transport or Boarding.....	124
8.	Increase Proportion of Catchment Area Population Attending School.....	126
9.	The School Map in Practice.....	127
9.1	The Legacy of the Past.....	127
9.2	Differentiation of Schools	128
a)	Differences in the Pupils for whom they cater	128
b)	Differences in Type of Curriculum Offered.....	128
c)	Differences in the managing bodies.....	129
9.3	The Question of Choice.....	129
10.	Conclusion	131
	Bibliography.....	131
	Appendix.....	132
	Self Assessment Questions	133

INTRODUCTION

School mapping is the process of planning the location and spacing of educational institutions. It is such a basic function of the management of any education system that one may justly be astonished that it has not before now claimed a more prominent place in the educational planning literature. On the one hand, it invites the exploration and elaboration of general principles, technical relationships and a particular methodology; on the other hand it raises questions of competing priorities, policies and values. Perhaps the reason why school mapping theory has not attracted more attention in the past is that the expansion of education system in the developed countries (from which most of the educational planning literature has emanated) has generally been gradual and piecemeal, often taking the form of adaptation of and additions to the existing school system.

The school map becomes a much more vital consideration when large changes are contemplated either in the scale of provision or in the structure of education. A comprehensive plan for supplying and distributing evenly new educational services become essential, if expansion and structural reform are to be achieved effectively and economically. In such circumstances a series of adhoc adjustments to the existing network of schools is no longer feasible. It would seem that both the opportunity and the challenge for rational school mapping are greater in the developing countries, where the scale of changes required is larger and where less physical and financial capital is invested in existing schools and colleges.

There are many educationists and educational administrators, who think that school mapping is simply a matter of taking a large scale map and putting on it the right kind of conventional signs to know where the various types of educational institutions are located or getting a sort of photograph of the existing regional or national school network that can be brought up to date by additions or dictation.

School mapping consists of a set of techniques and procedures used to plan the demand for school places at the local level and to decide on the location of future schools and the means to be allocated at the institutional level (Caillod, 1997).

It has also been defined as a set of techniques and approaches that has a geographical perspective of education at its core (Mendelsohn, 1996).

OBJECTIVES

The Objectives of the unit are to:

1. identify all the factors: pedagogical economic, geographical, social, administrative, political etc., which must be taken into account in designing a methodology for planning the location of schools;
2. formulate such a methodology to be used as a guide to schools location activities, while being sufficiently flexible and universal to be adaptable to the particular conditions of each region; and
3. apply the methodology to concrete problems facing educational planners, such as universal first level education, implementation of education reform.

1. SCHOOL LOCATION AS AN INDEPENDENT FACTOR IN PLANNING

1.1 The basic objective in (school mapping) the planning of the size and location of schools is to place schools at the most advantageous site from point of view of accessibility to their clientele, the learners. However it must be borne in mind that schools have come to assume such an important place in modern society that school location is not necessarily predetermined by existing residential patterns: it can itself influence them. The decision to afford or deny a primary school to an isolated rural community may, as Hallak and Mc Cabe have observed, vitally affect the viability of that community and the willingness of parents to continue to live and work there. A school brings material resources and employment into a community it ensures the presence of young people there: and it is itself a concrete expression both of the separate identity of a particular community and of its place in a larger system.

1.2 School location policy may therefore be used quite deliberately to hold people in rural areas and to sustain rural communities. A large and important institution like a university may create enough employment to become the main support of the economy of a medium sized town. Where new towns and new industries are being established, the provision of good schools is an important factor for the attraction of skilled workers and their families. Even where there is not official policy on the distribution of population it can readily be observed in many countries how the presence of a high quality school will attract those most concerned with education of their children to live in its catchment areas. In real life therefore, school location clearly affects and not merely reflects, population distribution and mobility.

1.3 The use of school location policies to influence population distribution and residential patterns commands less attention than the way in which population distribution determines school location. What is essentially a two-way interaction tends to be discussed as if it were a one-way dependence of school location on population distribution, present and future. In so far as the movement of population in response to school distribution receives any notice, it is discussed mainly in terms of the travel and transportation of pupils from home to school and not in terms of a more permanent shift of parental homes.

2. STEPS OF SCHOOL-LOCATION PLANNING

School mapping is a set of techniques and procedures used to plan the demand for school places at the local level and to decide on the location of future schools and the means to be allocated at the institutional level. This technique, which is also called school-location planning, finds its roots in France, where a special methodology was developed in 1963 to implement the country's major educational reform. The various circulars, regulations, standards and procedures developed for guiding the decision making process on where to locate new schools were known as the 'school map'. Since

then it has been extensively used in several countries to plan the location of primary and secondary schools.

As a technique it requires four steps:

1. diagnosing the coverage of the present educational service and the condition of the school network.
2. projecting the number of pupils to be enrolled in each village and hamlet;
3. defining the norms and rules governing the creation of new schools or the opening of a new section or class; such norms include the maximum distance that a child should be expected to walk to attend a primary, a middle or a secondary school; the minimum number of pupils required to allow the creation of a new primary school, a new middle or secondary school; the maximum number of pupils who should be enrolled in a class leading to the opening of a new section, etc.
4. The last step in school mapping is the preparation of the proposals or the local operational plan, that is to say, the proposals in terms of the number of primary schools to be opened, the number of classes and teachers to be planned; the number of classrooms to be built, or renovated; eventually, the number of classes or sections to be closed so as to respect the norms and the consequent redeployment of teachers.

3. THE SCHOOL CATCHMENT AREA

3.1 In deciding a school's location one has to concern oneself with two sets of considerations.

- a) the first is the availability and suitability of a physical site-the shape, and the size of the plot, the fitness of the ground for building (is it steep, swamp etc?) ease and safety of access, noise levels, health hazards, availability of water and power and so on.
- b) the second concerns the need for and the place of the new schools with the overall networks of schools.

Both conditions should be met if a new school is actually to be established. A suitable site must be found at a place where a school is needed. On the one hand it is not uncommon, especially in urban areas, for the lack of suitable sites to prevent the ideal location of a school from being realized. On the other, all too many schools have been established at physically attractive sites. Whose selection makes little sense in terms of the clientele the schools are meant to serve or in terms of the location of existing schools.

3.2 The place of the school in the overall network is logically of prior importance. The justification for the starting of a new school is that there are learners whom existing schools of the same type serve poorly or perhaps, not at all. It is the spatial relationship between schools rather than the question of the fitness of particular sites is the main concern of school mapping.

3.3 The key concept in developing a network of schools is of course the school catchment area the administratively defined geographical area from which the school draws its pupils. This catchment area must be defined for each school, partly by reference to the location of other existing schools of the same type, and partly by reference to population distribution and the maximum distance from which children can in fact travel to any school. In a compulsory education system every child's house must normally fall within the catchment area of a particular school or group of schools unless population is so sparse that education cannot be provided through schools at all but instead supplied through correspondence course or peripatetic teachers. All the populated parts of the country are then divided up into contiguous or if choice of school are allowed overlapping, catchment areas. It is only where education is not compulsory that populated areas can be found which are not assigned at least in theory, to the catchment area of any school.

3.4 The whole basis of rational schools location based on catchment areas is that other thing being equal there will be an appropriate school close to every pupils home and that pupils will by choice or direction, attend that school in this planner's paradise pupils are assigned to schools on the basis of objective criteria (e.g. location of home, age and sex of pupils etc.) schools of appropriate category are equal in quality and there is therefore no question of choice of school and no need for catchment areas of schools in the same category to overlap. Although the real world is different from this model, the nearer the two worlds approximate the easier the task of actual school administrators.

3.5 If aggregate pupils movements between home and schools are to be minimized, the catchment areas should be as small as possible. Pupils can then attend school very close to their homes. The short journey to school saves them and their parent's time and effort and possibly even expenses. It may also save the public authorities the effort and expense of organizing transport.

3.6 In order to maximize convenience and minimize cost, schools will be so sited as to permit the journey from home to school to undertaken on foot by all the pupils attending. This suggests that the maximum effective range of a school (the distance at which it recruits pupils) would be about one kilometre. In fact the youngest pupils might not be able physically to manage more than one kilometre each way and the limits of older pupils might be three km (2 miles). This of course assumes that there are no severe geographical hurdles to movements within a circle of one kilometre radius. In case of several geographical conditions the radius may vary accordingly. Tendencies towards absenteeism would be much greater where the maximum distance was walked.

3.7 Whether or not schools can be provided within walking distance of every home depends on a balance between:

- i) the number of potential pupils within a reasonable distance of the school. This number being the product of:
 - a) the overall population density and population structure in the area;
 - b) the sub population to be served, as defined by the structure of the education system and the basis for organizing schools and
 - c) the participation rate among the sub-population and
- ii) the acceptable minimum size of school

4. DETERMINANTS OF SCHOOL-MAPPING

4.1 The population structure is almost as important as population density in determining the number of children in a geographical area of given size.

4.2 The structure of education is highly relevant to the school mapping for the longer the primary school course the higher the proportion of the age group is likely to be enrolled.

4.3 The basis of school organization is another fundamental determinant of the size of a school's clientele. If schools are differentiated in such a way that each recruits not from the total population but from a sub population, ten schools of a given size must draw their pupils from further afield. The most-spatially efficient school is the comprehensive which takes in all children of a certain age range. But many school systems have separate schools for the bright, the dull and the handicapped; for children of different creeds and denominations. Then there may be a private system separating alongside the public one. Thus where as a fully comprehensive school may have a potential clientele of 1000 pupils within a 3 miles radius a private denominational boys technical school may have a maximum potential of not more than 20 pupils at this distance.

4.4 Data on population density and structure, together with information about education structure and organization will provide an indication of the maximum potential clientele of a school recruiting from its local catchment area. But in real life we find that schools often do not enrol all of those potentially eligible.

4.5 Low participation rates sometimes result from a deficiency in demand for education with parents or children deciding for cultural or economic reasons not to take advantage of places available in school system and school fees are sometimes an important factor in their decision. In other cases demand for low participation rate is deficiency in supply. A system of rationing operates because fewer school places can be made physically available than the demand for them. Admission to secondary school is often by examination. What this means in effect is that in any one area the number of students admissible to secondary school is far lower than the number of appropriate age who would like to attend. In a poor country with little public transport, a heavily selective system makes it inevitable that secondary schools serving rural areas will be widely spaced and very often boarding schools.

4.6 In many countries where a school mapping exercise has been initiated, the goals of school mapping were:

- i) giving basic education to all children to school age and extending teaching beyond the end of the period of compulsory education within the limits of resources available and the country's economic and social requirements.
- ii) providing for equality of educational opportunity by a geographical levelling off and equitable distribution of human, material and financial resources as well as through an equal social opportunity for, and access to schooling.
- iii) making the systems more effective by improving the ratio between costs and performance and

- iv) reforming structures, curricula and methods
a school map should help to determine the changes necessary in the schools, so as to adjust the supply to the education system's new characteristics as laid down in the reform programme. The scope of school mapping can therefore be further elaborated to include all types of educational institutions.

We can say the major objectives of school mapping are:

- i) equity
- ii) cost-efficiency
- iii) quality

As it contributes to planning the distribution of education supply all over the country, school mapping is a strategic tool to level off inequalities in the distribution of educational services between different regions. It can channel educational investment to poorly served areas. School mapping, in this sense, is a potent planning instrument for equalizing educational opportunities. It can ensure allocation efficiency in the planning process.

5. DETERMINENTS OF APPROPRIATE SCHOOL SIZE

5.1 Leaving aside for the moment the all important aspects of accessibility to learners, what constitutes a "good" size of school? There are at least three important considerations to be taken into account.

- i) First there is the question of pupil and teacher identity in the school. Is the school of a comfortable size for the pupils and teachers, enabling them to relate easily to each other and the institution. For a young child moving for the first time from his family circle, a nursery school of 30 or 50 pupils may be quite large enough. But as the child grows he can cope with a primary school, secondary school and university on a progressively larger scale without feeling oppressed by the anonymity of the institution.
- ii) A second and related consideration is the size of the institution that can be effectively managed and controlled by the head. This in turn will depend on the style of management and the degree of devolution of authority. If the Head can extensively delegate to deputies, administrative assistants, departmental heads etc., he can effectively handle a larger institution than if he is expected to deal personally with discipline of pupils, admissions, parental interviews, all staff matter, the time table, etc. A university or polytechnic can take 10,000 students in its stride only by allowing departmental and faculty structure to carry most of the administrative burden.
- iii) The third consideration is economy of scale. Consistent with promoting effective learning by the pupils one must ensure that resources in education are used as productively as possible. The most expensive inputs are teachers,

followed by buildings and fixed equipment. In a school of efficient size teachers and classroom will be used as intensively as possible – that is to say that teaching group will be kept at the maximum efficient size and as extensively as possible means that they will carry their full-time load over the school week.

- 5.2 The more usual problem is that of ensuring sufficiently intensive use by getting adequate class sizes. The traditional norm for class size in most countries are about 30-50 pupils for general class room instruction with subdivision for practical and applied work. When numbers in the teaching group fall below the norm cost per pupil. If they drop as low as the 10-25 level for general classes it may be considered by economizing on teachers and teaching space by combining parallel class or consecutive classes under a single teacher in one classroom.
- 5.3 In secondary schools if pupils are allocated to one or just two subject areas (say Arts or Science) a school might provide alternatives quite efficiently with only two streams. But when the aim is to give a really wide range of free subject choice to the pupils the school must be big if teaching groups of adequate size are to be found where the curriculum provides for subject differentiation and specialisation, it is not enough to insist on intensive use of facilities by ensuring that each teaching group is of optimum size. It is also important that the number of weekly teaching periods should be sufficiently high in each subject to allow adequate extensive use of specialist teachers and special facilities like laboratories. Art room and so on.
- 5.4 It is clear from the foregoing that no absolute rules about the maximum and minimum school size can be prescribed. In purely educational terms the ideal size of an institution will depend on the:
1. age of the pupils
 2. the style of the administration; and
 3. the type and breadth of curriculum

However, Gould reckons the ideal size to be about 650 pupils for both primary and secondary schools. Hallak and McCabe suggest a secondary school size of between 400 and 800.

The school mapper task is to reconcile the claims of national educational structure and school size norms with the obstinate facts of the inherited pattern of schools and local population distribution.

6. ESTABLISHING VIABLE EDUCATION INSTITUTIONS

6.1 Problems arise when the school/college size norm is unattainable given the potential number of clients for the school within walking range. Almost any school system is bound to encounter this problem at some level, though not necessarily at primary school. For as one moves up the educational ladder it becomes progressively more difficult to create a viable institution on a purely local basis. This is because on the one hand the desired size of institution tends to get bigger secondary schools and post-secondary institutions need to be relatively larger if they are to offer a comprehensive range of studies. On the other hand the eligible entrants are fewer reflecting at least four factors: first, in most developing countries population growth has meant that old age-groups are much smaller than younger; second: higher education is not compulsory and many people opt to leave formal education at the end of the compulsory stage; third: for financial reasons, the state cannot in any case afford to admit all to higher education who might desire it finally while some higher educational institutions are “polytechnic” and others are “mono-technic” offering only one speciality may attract fewer students. The same basic school mapping problem of reconciling desired institutions size with an insufficiently numerous local clientele arise at some point in all systems.

- 6.2 What are the possible solutions to this problem? There are three basic possibilities:
- to enlarge the catchment area by removing the constraints that attendance must be on pedestrian basis daily from the home;
 - to recruit to the school or college a higher proportion of the population in the catchment area;
 - to accept a lower norm for school size

6.3 To address the particular issues of a lack of educational demand, persisting low enrolment and low participation of girls, where the conventional method of school mapping, was not appropriate. The approach used in the Lok Jumbish Project constitutes a major breakthrough and a departure from the traditional one in three major aspects; it pays particular attention to mobilizing demand; it specifically emphasizes the need to articulate formal and non-formal education to satisfy specific demands; and last but not least, the basic principle defining the approach adopted relies on genuine participation at the local level and empowerment of the members of the community.

School mapping in Lok Jumbish stresses the process as much as a product. The important thing is that the community and parents feel responsible for its preparation and are committed to its implementation. This is necessary to break the cultural blockages which are responsible for continuously low enrolment.

7. EXTEND RANGE OF SCHOOL BY TRANSPORT OR BOARDING

7.1 If the required area does not produce enough pupils for a school of the desired size, then one solution is to space schools further apart and enlarge the catchment area. In that case pupils in the parts of the catchment area most remote from the school must be conveyed to school daily by the public transport system or through special school buses or else pupils can travel termly, lodging during term either in specially provided boarding accommodation at school, or with friends and relatives near the school all these solutions involve extra expenditure in money to parents and the authorities and expenditure of time to the pupils. But the monetary cost may be offset partially or wholly by saving realized by the creation of school of a more economic size i.e. by spreading the cost of teacher's salaries and maintenance of facilities over a greater number of pupils.

- a) *A daily transport system* can vary greatly enlarge the range of a school's recruitment. Journey by bus in all four directions i.e. east, west, south and north yields a catchment area five times as large as a purely pedestrian catchment area. Public transport or special school transport is the most common solution to the problem of creating viable schools in richer countries. But in poorer countries financial circumstances do not permit this solution to be applied in more than a few areas. There are other difficult logistical problems to be overcome, particularly in developing countries where servicing facilities may be inadequate and roads liable to become impassable in bad weather.
- b) *Movement of pupils to live with relatives* and friends during term time is in one sense an intermediate solution, a compromise between daily school attendance from home on the one hand and a permanent move of the parental home on the other. Living with friends or relatives during schooling is a fairly common phenomenon in developing countries. However, it cannot be regarded a permanent part of any planned school map for the possibilities of lodging with friends and relatives very enormously between family and family and in the long term urban branches of families be expected to lose contact with their rural cousins.

7.2 Boarding is a solution which to a large extent liberates the school from the constraints of demographic distribution, for a boarding school can be more or less free of catchment area considerations and might be located anywhere in relation to the students it serves. The main considerations in finding the most rational location for boarding schools in the short term will be accessibility to transport for the pupils, making the twice termly journeys between their home and school; the availability and cost of food in the area where the school is to be; and the possibility of attracting staff. The central siting of boarding schools may also prove an advantage because it facilitates their ultimate conversion to wholly or partially day attendance institutions.

- 7.3 The essential school mapping argument in favour of boarding schools is:
- that they permit large schools to be formed to serve sparsely populated areas;
 - they serve as a device which helps to make available equality of educational opportunity regardless of pupil's homes;
 - by separating school location from demographic distribution, the boarding schools can also serve a politically useful function in making it possible to provide educational facilities to outlying centres of political importance. Even though there may be insufficient classified candidate in such places the school can then be sustained on a boarding basis from outside the area;
 - the boarding institutions contribute to national unity by mixing students of different regions and backgrounds;
 - the pupils in the boarding schools can easily be provided with opportunities for out of class study and recreational and leisure activities and that the community life of the boarding school provides a better setting for the social education of the child;
 - furthermore in poor countries boarding pupils are more likely to receive a balanced diet and proper health-care than home based pupils.
 - finally, by isolating pupils from their normal environment, they can be civilised, their culture "improved" and their morals "protected".

7.4 Argument Against Boarding Schools

1. Against boarding a major argument is the additional capital and recurrent expense involved in having to feed and house pupils.
2. Secondary and, perhaps, more powerful are the considerations concerning the potential harm that may be done by isolating young pupils from their family background and community. Pupils are cut off from their home life which may result in emotional strains.
3. Community cannot easily regard a boarding school as their school; support for schools is diminished and their estrangement from the community enhanced.

8. INCREASE PROPORTION OF CATCHMENT AREA POPULATION ATTENDING SCHOOL

8.1 The most obvious way of ensuring that the maximum possible size of school will be attained in any area is to ensure that 100% of eligible pupils attend. It has already been discussed that low participation rates in school may be in some areas due to lack of supply of school places. In other cases however, schools exist which are not fully enrolled. There is lack of demand from parents reflecting social, cultural or economic factors. Where school fees are charged, there constitute a particular strong disincentive.

8.2 There are numerous ways in which the authorities can make school more attractive to parents and so increase participation rates. Only a few can be mentioned here.

1. The school day and the school year can be phased in such a way as to permit children to be available to help with household activities and harvesting.
2. Special efforts can be made to adapt the curriculum to local concerns and to attract local persons into teaching in order to increase the community's confidence in local schools.
3. Most directly fee can be remitted in whole or in part.
4. Where schools are only half full it is worth hearing in mind that the marginal cost per place of expanding enrolment is far lower than the average cost per place. Similarly, moves towards universal enrolment reduce the need for expensive boarding schools and facilitate a cheaper day system with shorter journey times.

8.3 It must be recognised that the authorities will not always be in a position to universalize schooling across the country; but it is suggested that local school boards should have discretion to modify national regulations on fees, admission standard etc., in such a way as to ensure that all places provided are actually taken up. The alternative policy would be to site schools where they can most readily be filled; and that would indeed be the cheapest way to reach overall national enrolment targets. It would imply 100% enrolment and full schools in some towns while others have no schools at all. In choosing between these alternatives it is likely that political considerations will be the deciding factor, but an educational planner must keep in mind the real justification to provide the school to a certain place/town.

8.4 As is noted earlier that school size is a product of length of course (in year grades) and number of form entries or streams. If local conditions preclude the recruitment of more than one class to first grade of school, it becomes all the more desirable to lengthen the coverage of the school in terms of grades. This suggests two things: First, the structure of basic education in sparsely populated countries should be based on few long stages rather than many short ones and second; wherever local conditions permit, the organisation of education should provide for the culmination of successive stages in an all-through institutions. It may still be feasible to retain separate corporate entities for, say a primary and junior secondary section of a school which is nevertheless sharing some staff and

facilities and deriving economics of scale from this arrangement. Combination of stages is most appropriate, therefore, where most pupils continue from the lower stage to the higher stage and where the higher stage does not require a highly diversified multi option curriculum. Higher secondary schools are good examples of combination of two stages i.e. secondary schools and college are running successfully in Pakistan.

8.5 Re-examining the Potential of Small Schools

If none of the foregoing approaches to increasing school clienteles proves acceptable either because the expense of transport, boarding and increasing enrolment ratios is insupportable, or because social values and popular attitudes demand differentiated schools-then the educational planner may have no alternative but to reassess his ideas about minimum school size. A number of questions pose themselves. How should the educational benefits of the small informal school be weight against its disadvantages? Do the economic and pedagogical disadvantages of the small schools always out weight political, social and religious preferences for separate or more localised schools? Is it possible to minimize the disadvantages of the small school by designing multi-purpose teaching able to handle mixed age and mixed-grade learning groups in primary school or to teach a variety of subjects at secondary level? How vital in fact is the multi-option curriculum? Could the essential components in terms of skills and attitudes be conveyed through a curriculum of more limited subject range than we have been accustomed to consider? Can we expect the shorter home school journeys (implied by reduced school size) to have a favourable effect on pupils learning achievement in school? We may have to accept that the small school will be as much a part of the world educational scene as the large one for some time to come. Perhaps the real challenge is to start thinking creatively about the potential of the small school.

9. THE SCHOOL MAP IN PRACTICE

Our discussion has been directed towards the issues involved in establishing an ideal school map where the school mapper has to accept the facts of existing population distribution, but otherwise has a virtual carte balance. The assumptions in what we have been considering are that we are free from the constraints of the past in drawing our map; that all children in an area are potential recruits to their nearest school since schools are the same in type; that learners are assigned to schools rather than choose them; and that the essential problem the school mapper is facing is that of devising a rational school map for a single point of time. But in real life the harassed educational planner or administrator find that few and possibly none of these assumptions holds good. In other words the principles discussed are guiding stars, pointing the direction, but cannot be regarded as rules applicable in every real life situation.

9.1 The Legacy of the Past

In education, the present is determined by the past and changes can be made only slowly. An educational administrator is liable to find a mismatch between the current distribution of school facilities, and present population. The inherited pattern of schools does not comprise a network of institutions each standing at the centre of good sized

catchment area. Towns which were once economically important have more than their share of facilities. Older towns and villages often possess a plethora of small schools, having overlapping and competitive catchment areas; while new suburbs and shanty towns may have sparse provision of school places.

Whatever the origins of present anomalies in the distribution of school facilities it is not a simple matter to rectify them. Redistribution is always easier in circumstances of growth for this makes it possible to concentrate development on areas with a poor ratio of schools to school age population, without in fact worsening the position in already disadvantaged areas. Everyone can then have a sense of improvement and progress, even if some areas move forward faster than others. But in extreme cases of depopulation, educational reorganisation or reform, it may be necessary to close or merge some existing schools. Ideally whenever school closures or mergers are being considered, a full cost, benefit analysis would be undertaken which sets a value on pupils travel time as well as on public and private financial expenditures.

9.2 Differentiation of Schools

In our previous discussion of catchment area and school size it was assumed that schools for a particular age range were of a single uniform type so that all school going children of the same age would go to the same type of school. In practice we find differentiation between schools at the same level. Differentiation is based on three types of characteristics:

- (a) Differences in the pupils for whom they cater;
- (b) Differences in the type of curriculum offered;
- (c) Differences in the managing bodies.

(a) Difference among Children of the Same Age

The most obvious one is sex and one frequently finds single sex schools, reflecting the fact that certain religious groups and cultures strongly disapprove of co-education for boys and girls. Separate schools may also be established for children of different measured abilities. For example nearly all education systems make special provision for the handicapped; and a few select out the genius for separate education.

(b) Difference in Type of Curriculum Offered

A second set of distinctions between schools may be made on the basis of curriculum and content. For example some schools may use a local vernacular language, others a regional or national language Franca. Yet others an international language like English as a medium of instruction. Another set of differences may be on the basis of specialized subject content, particularly at the upper secondary or post secondary levels where one may have different education institutions specializing in say commercial subjects, arts technical education and vocational etc.

(c) Differences in the Managing Bodies

Third there may be differences in management and financing. Schools in the public system may be directly under the central or Provincial Government; they may be managed by local authorities; or they may be controlled and managed by voluntary agency/field the most common set of distinction is based on religion. Outside the Ministry of Education System there may be schools run by the Ministry of Defence at Army establishments. Then again beyond publicly financed schools is to be found a system of unaided private schools run by charitable trusts, religious bodies, private profiteers and by some community groups. There are, of course, many different views about the desirability or otherwise differentiation of schools. The most widely acceptable forms of special provision are for severely handicapped children, and differential provision in prevocational and vocational training. Most other forms of differentiation are hotly debated, some arguing that variety is valuable and differences should be recognised; others that schools should stress common values, not differences.

From the point of view of the school map the point that must initially concern us is that differentiation reduces the size of the potential clientele for any one school. A girls schools needs twice as large as catchment area as a mixed school in order to attain the same size.

9.3 The Question of Choice

The tidiest formula to operate administratively is one of compulsory zoning which allocates each child to his nearest school, establishing catchment area which are mandatory and exclusive to each school. Each child's school is then determined by his place of residence. In any system of compulsory education the value of zoning is that it is a means of ensuring adequate provision. Parents can easily identify the school which should admit their child and don't spend time searching fruitlessly for places in several schools; and schools have a definite responsibility to admit every applicant from a particular area.

Where really strict zoning is in force parents who want their children to attend a particular school can only afford this by moving their residence into the catchment area for that school or under the family structure arrangements prevailing in some countries by sending their children to live with relatives residing in that catchment area. This procedure tends to lead to schools reflecting rather closely the cultural and social characteristics of the locality where they are situated. This result may be viewed favourably or unfavourably.

Some forms of school differentiation are quite compatible with compulsory zoning. Any form of differentiation which is found-on the basic characteristics of a child can form the basis for zoning – in the case of sex differences it is obviously possible to say that all boys in area A will go to a particular school and all girls will go to school Y. Similarly, children can be allocated to zones schools on the basis of their assessed ability;

but in this case one is likely to encounter some parental questioning the assessment decision.

If schooling is compulsory and schools are differentiated, parents should be assisted, within reason, to transport their children to a school of their choice. Theoretically, the principles of zoning and of parental choice can be reconciled if a large catchment area is delimited for a group of schools, including one school of each type. But this is much more feasible in towns than in the countryside. In rural areas one is still liable to find that the nearest school is farther than they are able to walk. The discussion on choice thus far has been in terms of formal differences between schools and parents rights to make choices between schools with different managements, different media or instruction or different specialism. Yet one must also recognise that wide actual differences exist in the qualifications of staff, the quality of the premises, the excellence of the teaching and the range of the curriculum. Schools with a high reputation attract good pupils record on examinations and enhancing their good name. But the question is what should be done about access to such excellent schools? Can good schools be reserved for the children of one local catchment area or should be done about access to such excellent schools? Conversely, when a school is poor in quality, can the people living in its catchment area be forced to send their children to it, which is what a strict zoning policy entails? Can the few excellent schools be identified and treated as a formally separate category. How can one make zoning and catchment areas politically acceptable when wide differences in quality are known to exist? And they again what exactly does parity of quality involve? Schools may enjoy the same general reputation and quality but may yet offer different subjects and have different specialities.

On the whole, one can say that schools for the same age group should be as comprehensive in their intake as possible so that schools of adequate size can be formed close to pupil's homes. A system of defined catchment areas is useful as a check on whether every child has a potentially accessible school, and to identify those groups of children that are beyond the range of any school. Continuous efforts must be made to ensure that each school offers the full course in terms of years and grades, and as comprehensive a range of options as possible while parents would normally be expected to send their children to the nearest school, which in turn would give preference to the neighbourhood children, the rights of parents to make choices should be respected. It may however be feasible and reasonable to restrict choice to a group of local schools, bearing in mind that parents might remain free to resort to the private system, which operates as a useful safety value for frustration with the public system. In all this work it is essential to undertake continuous consumer research on what parents really want, which characteristics of schools are most important to them (accessibility, curriculum, managing body, quality etc) what is the volume of applications for types of schools and courses and from which localities, and the trend of demand for places at particular schools.

10. CONCLUSION

The schools mapping is an activity or planning exercise primarily carried out by the local school administration. The local planner or the district education officer; it is part of an exercise of documentation of educational planning. This is considerably an improvement compared to the situation where all the decisions concerning the opening of schools, expanding them or closing them, and concerning the recruitment or redeployment of teachers, are taken at the central or state level. In order to engage in a more participatory process a number of countries have created school mapping commissions where the relevant administration, different political bodies and stakeholders (parents association, teacher unions, and employers) are represented. Such commissions meet at local regional and even central level indeed decision with respect to creating a school, expanding it, upgrading it to become a middle school, or for closing it are always political decisions. They require consultation and negotiation too often, however, the preparation of the school map does not involve members of communities, parents or potential parents. It does not, in particular, involve minority and disadvantaged groups, which are generally not organized and therefore, not represented in local councils and other political bodies.

The school map should be a forward looking and dynamic vision of what the educational services with their premises, teachers and equipment should be in future so as to enable education policy to be implemented. It is sometimes referred to as 'educational map' because it could plan for all types of educational activities, including out of school literacy programmes. Post literacy courses, vocational training, etc. Also, because educational activities may also be carried out in churches, mosques, co-operatives and so on. This latter enlarge concept, enunciated above as educational/mapping, is indicative of the potential of school mapping but it has not yet been fully translated into action in any of the school-mapping exercises that have been carried out in different countries.

BIBLIOGRAPHY

1. Hallak, Jacques and Mocabe, James, *Planning the Location of Schools Case Study 1*, Country Sligo, Ireland, Paris, UNESCO IIEP Paris, 1975.
2. Gould, W.T.S. *Planning the Location of Schools, Case Study 2 Ankole District Uganda*, (Paris UNESCO IIEP 1973).
3. Evaluation and Programme Planning Volume 25, Issue 1, February, 2002, Page 23-33
4. <http://ddp-ext.worldbank.org/edstats/INDpub99.pdf>
5. International Institute for Educational Planning
<http://www.unesco.org/iiep>

APPENDIX

CATCHMENT AREAS, SCHOOL SIZE, POPULATION ENROLMENT RATES

The following table (based on the case study by Gould, p.47) illustrates the inter relationship between population density (Col 1) School “range” or catchment area size (Col 2), population structure (Col 3), participation ratios and school size (Col 4). Given the type of population structure existing in Ankole a ten grade school of 600 pupils could be obtained in areas with 50 per sq km and a 52% participation rate or in areas with 100 per sq km and a 26% participation rate.

1	2	3	4					
Population per sq km	Pop. In 5 Km radius area (col 1x78.55)	of which 5-14 (29.6 of col 2)	Enrolment given different participation ratios (% of Col 3)					
			10	20	30	40	50	60
10	786	233	23	47	70	93	116	140
20	1571	465	47	93	140	186	233	279
30	2357	698	70	140	209	279	349	419
40	3142	7930	93	186	279	372	465	558
50	3928	1163	116	233	349	465	581	698
60	4713	1396	140	279	419	558	698	838
70	5499	1628	163	326	488	651	814	977
80	6284	1860	186	372	558	744	930	1116
90	7070	2093	209	413	622	826	1047	1256
100	7855	2325	233	465	693	930	1163	1395

Note:- The above table could be adapted and extended to give 100 participation ratio for any country, once population structure is know the number of young people in Ankole from an abnormally high proportion of the total population and we would normally find a smaller percentage of the total population in the school age group than Ankole’s 29.6%.

SELF-ASSESSMENT EXERCISE

1. What is the importance of school mapping in the developing countries in recent times and why it was not popular in the past?
2. What benefits a community can get from the existence of a school.
3. What considerations should be kept in the mind of a planner while selecting the location for school.
4. You want to start a new school in your town/community. How would you justify its establishment.
5. Through which measures an educational planner can provide maximum convenience and minimize cost on education for pupils.
6. Indicate the determinants of schools mapping.
7. What constitutes a good size of school?
8. Find out a possible solution to the problems faced to an educational planner to create a value-able institution at secondary and post secondary levels in developing countries like Pakistan.
9. Give your arguments in favour and against the boarding schools.
10. What are the reasons of low participation rates in schools and what you would suggest to improve the enrolment.
11. What kind of issues are involved in establishing an ideal school map?
12. Categorise the differences of schools at the same level and what are its effects on the quality of education.
13. If schooling is compulsory and schools are differentiated how one can make zoning and catchment area politically acceptable?
14. What measures should be adopted to have an access to excellent schools for children?
15. Study the appendix (catchment areas, school size, population and enrolment rates). In the light of the case study by Gould develop a similar chart to give 100 per cent participation ratio at primary level in Pakistan.

ANSWER

1. Para 1.1, 1.2
2. Para 2.1, 2.2
3. Para 3.1
4. Para 3.2
5. Para 3.6
6. Para 4
7. Para 5.1 & 5.2
8. Para 6 & 7
9. Para 7.3 & 7.4
10. Para 8.1 & 8.2
11. Para 9
12. Para 9.3
13. Para 9.4.3
14. Para 9.4.4
15. Do yourself

Unit-7

STATISTICS AS A TOOL OF EDUCATIONAL PLANNING

Written by:

Mrs. Rashida Parvez

Revised by:

Mr. Z. D. Farooqi

Reviewed by:

Ms. Tahira Bibi Naushahi

CONTENTS

S.No	Description	Page No.
	Introduction.....	138
	Objectives.....	139
1.	Basis of Collection of Data.....	140
1.1	Aggregated Data	140
1.2	Individualized Data	140
2.	Type of Educational Statistics	140
2.1	Stock Statistics.....	140
2.2	Flow Statistics.....	140
3.	Data Needed for Educational Planning.....	141
3.1	Demographic Data	141
3.2	Manpower Data.....	142
3.3	Economic and Financial Data	142
4.	Classification of Educational Statistics	143
4.1	Schools, Grades, Classes	143
4.2	Levels and Types of Education.....	143
4.3	Educational Attainment and Literacy.....	144
5.	Statistics on Educational Institutions.....	145
5.1	Institutions by Level and Type of Education.....	145
5.2	Institutions by Region	145
5.3	Data on Teachers (Basic Data)	145
5.4	Data on Teacher (Supplementary Data)	145
5.5	Classes.....	146
5.6	Pupils.....	146
6.	Data on School Facilities and Equipment	147
6.1	Physical Facilities	147
6.2	School Transport Facilities.....	147
6.3	School Lodging Facilities.....	147
6.4	Scholarship Fellowship	147
7.	Cost of Education	148
7.1	Basic Data.....	148
7.1.1	Recurring Expenditure on Education by Public Authorities.....	148
7.1.2	Capital Expenditure on Education by Public Authorities	148

7.1.3	Loans Repayment and Interest Charges, Related to Educational Expenditure	148
7.2	Private Expenditure for Education	148
8.	Sources of Errors in Statistics	148
8.1	Errors of Coverage	149
8.2	Errors in Collecting and Reporting	149
8.3	Errors in Compiling and Processing.....	149
8.4	Errors in Sampling	149
8.5	System Errors	149
8.6	How to Manage and Control Error.....	149
9.	Statistics and the Decision Making Process in Educational Planning.....	150
10.	Conclusion	151
11.	Bibliography	151
12.	Self-Assessment Questions.....	152

INTRODUCTION

The process of educational planning comprises collection and analysis of qualitative and quantitative information, to serve as a basis for policy-making and administrative decisions regarding the future development of education. The qualitative data that an educational planner takes into account is the objectives of education, educational policies, the content of education, equality of opportunity to education, quality and relevance to education etc.

The quantitative data are statistics on student's teachers, school buildings and costs etc. This unit will concentrate on quantitative data. Quantitative statistical approach is very important in educational planning. The dimensions of the future educational system have direct and significant financial implications. All projects for improvement and expansion of the educational system must be properly costed before the policy making authorities can take their final decision. The reliability of such figures on the future cost of education depends on the adequacy and accuracy of the data and statistical skill displayed in analyzing the material.

It is not practicable to present standardized procedure regarding the collection and utilization of statistical information to be universally applied for the purpose of educational planning. The statistical approach to be adopted depends essentially on the scope and objectives of the planning process. In short term planning covering only next few years, it may be useful to pursue the statistical calculations in great detail and to attempt fairly precise forecasts.

Educational planning may also be distinguished as between specialized planning concentrating on a particular level or type of education and comprehensive planning covering all types of education at the same time. It is clear that no single standard scheme can be proposed for the choice and treatment of statistical data that would be suitable for all types and purposes of educational planning.

OBJECTIVES

When you have intensively gone through this unit, you should be able to:

1. Forecast the demand for education of different kinds and to estimate the future stock of students in different educational sectors to ensure that adequate educational resources, teachers, buildings, equipments etc. are available at right time.
2. Forecast the future outflow of individuals with assorted kinds of education to estimate the future cost for the educational system.
3. Give information for the current administration of the educational sector and data useful for educational research.
4. Give a broad description of the educational sector for the general public.
5. Give some indications of the statistics which would be needed to perform an educational planning function.

1. BASIS OF COLLECTION OF DATA

The educational statistics is collected on the aggregated basis and individualized basis.

1.1 The collection of data on aggregated basis means that central statistical unit asks the authorities responsible for reporting data e.g. Principals, headmasters, District Education Officers, or directors of Education on schools to provide information about students and teachers distributed by sex, age, grade, etc. Most countries and institutions collect their statistics on aggregated form.

1.2 The data collected on individualized basis means that there is a reporting to the central statistical unit on each individual student or teacher. This requires some kind of identification of the individuals e.g. an identity number. The two terms of basis of data can be summarized as:

Aggregated data

The school provides information on students and teachers distributed by sex, age, grade etc.

Individualized data

The individuals provide information on a considerably more detailed basis.

2. TYPES OF EDUCATIONAL STATISTICS (Stock and Flow Statistics)

The two types of data, one pertaining to the stock and other to the movement or flow are defined as follow:

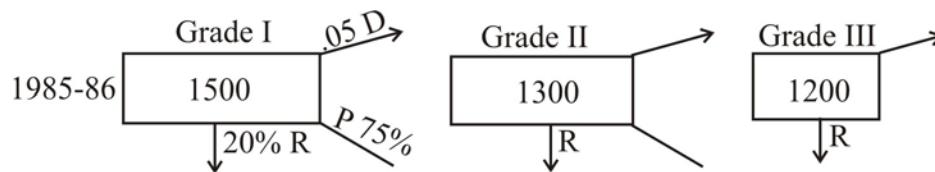
2.1 Stock Statistics

It describes the situation at a specific date generally the reference data of the school courses, in terms of total number of schools, teachers, students for each type and level of education. They represent the actual “stock position” in the educational system and form the basis on which the planner will project future development.

2.2 Flow Statistics

These relate to what happens to students and teachers between years. Students who were in grade I of primary school in one year, where are they next year? Have they been promoted? Are they repeating the grade? Similar question can be asked about the teachers. How many of them left the profession this year and why? How many upgraded their qualifications? How many teachers joined the new force? The answer to all these questions is of critical importance to the planner. How could he project the enrolments if he does not know the manner in which the student flows through the system.

Examples of stock data and flow data are shown below:



1. Boxes represent stock data _____ enrolment.
2. Arrows represent flow data _____ “flow rates” such as promotion, repetition and dropout rates.

3. DATA NEEDED FOR EDUCATIONAL PLANNING

Statistical data is desirable for the proper implementation of educational planning. In the following discussion we will deal with the data which preliminarily serve the purpose of educational planning.

- 3.1 Demographic
- 3.2 Manpower
- 3.3 Economic and financial

An attempt has been made by sub-dividing all items under each type of statistical data in the two groups of priority i.e. basic data and supplementary data. The basic data is used for a relatively simple type of overall educational planning. The supplementary data is used for special purposes e.g. detailed and profound studies of special sectors within the educational field.

3.1 Demographic Data (Basic Data)

In cases where centrally made population projections do not exist, or must be supplemented in certain respects, it is important for the educational planner to have appropriate information about prevailing tendencies in the demographic development of the country, enabling him to make some rough estimates of future changes in the population structure. It is therefore desirable to have information on the number of live births and the crude birth and death rates for a sufficiently long period of years past.

(a) Total Population by Gender and Age

Adequate statistical information about the structure of population is very essential factor which provides the quantitative framework for the development of educational planning. First of all figures are required about the total population of the country according to the latest census with a distribution by sex and age. The age classification commonly used in censuses by five year-ages (0-4 years, 5-9 years, 10-14 years, etc). does not as a rule fit in given country. The relevant age groups have, therefore, to be estimated by means of interpolation in the standard age classification.

For purpose of regional planning, the population data needs to be available for the relevant district. Data on population density would also be desirable. A distinction between urban and rural areas is required because of the basic differences in educational needs between such areas.

- (b) Population 15 years old and over by sex, age and educational attainment (supplementary data)

A suitable age classification would be from 15-19 years and over. Certain differences in educational attainment for the various age groups are to be expected as reflecting the gradual development of education over a long period of time. In some cases inequalities between male and female may be very pronounced. A further breakdown by urban and rural areas is of great interest in order to throw some light upon essential differences as to the existence of educational facilities.

Where migration is of any real significance, information merely about birth and death rates is not sufficient for estimating the future growth of the population. Data are also required about the net external and internal migration with appropriate age distribution.

3.2 Manpower Data (Basic Data)

- (a) *Economically active population, by industry and educational attainment:*

The general objective of educational planning in relation to economic development is of providing the country with the adequate number of each type of qualified manpower, statistical information about the economically active population is required. Whenever possible a cross classification should also be given between industry and educational attainment. This is important for education of the effect of future changes in the industrial structure of the labour force in the terms of educational needs.

- (b) *Economically active population by occupation sex and age (supplementary data)*

It would be useful to have a cross classification of occupation by sex and age. The present composition of relevant professional and vocational groups is of great importance in the case of a more detailed planning procedure where estimates are made of the need for replacement of persons leaving the profession over a given period of time.

3.3 Economic and Financial Data (Basic Data)

- (a) *Gross national product, indices of economic growth:*

The economic resources of a country are naturally important in all educational planning. In the first place data on the gross national product GNP are required for a sufficient period of time, to elucidate the economic development in broad lines. Due consideration should be given to influence of overall population changes, changes in the proportion of economically active population and variations in the monetary values e.g. by computing

index numbers of gross national product, at constant prices per capita and per employed person. If full information about the gross national product or national income is not available other suitable indicators of economic growth might be used for example industrial production and agricultural production.

(b) *Total expenditure by authority and purpose:*

The information should be provided about the total expenditure by all kinds of public authorities in the country, Central or Federal Governments, city, districts or other local authorities. The total public expenditure should furthermore be distributed by purpose e.g. social welfare, public health education, national defence etc. Such figures for a series of years illustrate the present position and recent tendencies concerning educational expenditure in the context of public economy. These are extremely important for the integration of educational planning into an overall economic planning for a county.

4. CLASSIFICATION OF EDUCATIONAL STATISTICS

It is important to have a proper classification of data when presenting statistics on schools, classes, students and teachers. Some definitions and classifications are given below derived from the Manual of Educational Statistics UNESCO 1961.

- 5.1 Schools, grades, classes
- 5.2 Levels and types of education
- 5.3 Educational attainment and literacy

4.1 School

Educational institution is a group of pupils of one or more grades organized to receive instruction of a given type and level under one or more than one teacher with an immediate head e.g. public school, private school.

A grade is a stage of instruction usually covered in the course of a school year. A class is a group of students who are usually instructed together during a school term by a teacher or several teachers.

4.2 Levels and Types of Education

The classification of education by level should be possibly made in the following way; Traditionally, the levels of education are three:

1. Elementary Education (pre primary, primary and elementary level of education) Class K.G, 1 – VIII
2. Secondary (S.S.C and H.S.S.C) Class (IX – XII)
3. Tertiary generally called university education and higher education. (XIII – Ph. D)

We continue to accept the three level stratification of education. They are often referred to as first, second and third levels of education, respectively. Further refinements have been attempted and one such classification identifies as many as six levels; namely

1. Level 0: Pre-Primary Education.
2. Level 1: Primary Education or first stage of basic education.
3. Level 2: Lower Secondary or second stage of basic education.
4. Level 3: Secondary education (upper) higher stage.
5. Level 4: Post-Secondary Non-tertiary Education.
(not of the type that leads to a university degree)
6. Level 5: First stage of tertiary Education (not leading directly to an advanced research qualification)
First University degree or equivalent.
7. Level 6: Second Stage of Tertiary Education (leading to an advanced research qualification) of all type that leads to a post graduate university degree or equivalent.

Similarly, we recognize a number of types of education. In secondary education, we identify such types as:

- (a) General Education
- (b) Vocational Technical
- (c) Teacher Training
- (a) General Education:
General Education does not aim at preparing the pupils directly for a given trade or occupation.
- (b) Vocation Technical:
Vocational Education, which aims at preparing the pupils directly for a trade or occupation other than teaching.
- (c) Teacher Training:
Teacher training's aims at preparing the pupils directly for pre-school, kindergarten elementary school, vocational, practical non vocational subject, adult education, General and specialized teacher training programmes.

4.3 Educational Attainment and Literacy

The educational attainment of a person is the highest grade or level of education completed by a person in educational system.

A person is literate who can with understanding both read and write a short simple statement on his everyday life.

5. STATISTICS ON EDUCATIONAL INSTITUTIONS

5.1 Institutions by Level and Type of Education (Basic Data)

Statistics are required for all types of schools, at each level of education i.e. pre-school, primary, secondary and higher level of education. At secondary level we should not only relate to general, vocational and teacher training schools but institutions for special education i.e. for physically, mentally handicapped and socially mal-adjusted children should be reported. A breakdown of schools into boys and girls may prove necessary for determining future policy of providing educational facilities for boys and girls. Public and private institutions should be reported separately.

5.2 Institutions by Region (Supplementary Data)

The number of schools and institutions of different types and levels of education given separately for the administrative divisions of the country is very necessary for regional planning. Distribution between urban and rural areas is of great interest because the educational requirements are quite different and the planning policy must be properly adopted.

5.3 Data on Teachers (Basic Data by Age Group, Sex and Qualifications)

- (a) By Age: The age distribution of the present teaching staff is important to calculate the future losses by death and retirement. In general breakdown into five years age group is sufficient e.g. below 20, 20-24, 25-29, 60-64, 65 and above.
- (b) By Gender: The composition of staff by gender is of great importance. Since female teacher may have a more restricted serviceability in rural areas and a great likeness to leave the profession after marriage.
- (c) By Qualification: Information about the actual qualification of teachers in service is one of the basic factors in all educational planning. Although the teacher training programmes aim at replacing all formally unqualified teachers but proper consideration must be given to the teachers who have long service experience in teaching profession.

5.4 Data on Teacher (Supplementary Data)

- (a) By subject: Although the primary schools are organized according to the class-teacher system, yet teachers for certain subjects such as handicrafts and physical education are needed at the first level of education. In secondary schools teachers teach two or several subjects. The data is therefore, required not only by single subject but by combination of subjects as well.
- (b) Full Time and Part-Time Teachers:
In some countries for certain levels and types of education particularly in non-formal educational institutions part time teachers play an important role. Statistics should be available about the number of full time and part time teachers of every relevant level and type and total number of hours per week

taught by each category of teachers. With such data in hand it will be possible to calculate the future needs of the teaching staff.

- (c) Data on non-teaching staff
The personnel like inspectors, supervisors, administrative officials, guidance, library and servants are also involved in the operation of educational system. It is desirable to have well adapted data on them.

5.5 Classes

- (a) Number of Classes by Grade (Basic Data)
The class as a work unit in the school system has a special importance in the planning process because of its close connection with the two major problems of providing a sufficient supply of teachers and classrooms. It is necessary to have data for all relevant levels and types of education about the number of classes with each grade distinguishing between urban and rural areas.
- (b) No. of Classes by Size (Supplementary Data)
It is desirable to get information about the frequency distribution of classes according to the No. of pupils enrolled e.g. less than 15, 15-19, 20-24 etc. with such data in hand the policy-maker can evaluate the quantitative and financial consequences of different proposals to reduce the class size by limiting the No. of pupils to a certain limit.

5.6 Pupils

Adequate statistical information for each level and type of education, regarding the No. of pupils enrolled by sex, age and grade is very essential requirement for all educational planning. Statistics about the total population in the relevant age groups and enrolment ratios indicate the relative coverage of various levels of education and may be used as a basis of school enrolment projections.

Data should be compiled yearly for each relevant kind of education giving:

- (a) Basic Data
 - (i) No. of school leavers by grade, sex and age. Problem of drop-outs is of special importance and deserves special attention in the planning procedures.
 - (ii) No. of students who leave school after having passed the final examination.
 - (iii) No. of those who leave school prematurely.
 - (iv) No. of pupils repeating grades.
 - (v) No. of students enrolled in special education.
 - (vi) No. of students enrolled at the second level of education by branch of study. (Combinations of subjects)
 - (vii) No. of pupils at the third level of education i.e. universities, teacher training colleges and other professional institutions by field of study i.e. Humanities, Education, Fine Arts, Law, Social Sciences, Natural Sciences, Engineering, Medical Sciences, Agriculture separate figures are necessary for male and female students.

- (b) Supplementary Data
 - (i) No. of pupils by region with a distinction between urban and rural areas.
 - (ii) Statistical information about the socio-economic background of pupils.
 - (iii) The data on the domicile of pupils for certain levels and types of education.
 - (iv) Data on average daily attendance refers to the number of pupils attending school each day for each type of education and between grade and sex will enable the planner to propose steps to improve school attendance.
 - (v) Data about the number of students enrolled in institutions at the third level outside the country.

6. DATA ON SCHOOL FACILITIES AND EQUIPMENT

6.1 Physical Facilities:

Educational planning involved programmes or the future supply of well-adapted premises for the school system. Data therefore, should be gathered for the relevant level and types of education about the size of school buildings by means of distribution according to the number of class-rooms places contained and their utilization.

Data should be provided also for number of rooms for special purposes such as laboratories, room for handicrafts, gymnastic halls, libraries etc.

If data is properly specified it will enable the planner to calculate besides the needs for new class-rooms due to educational expansion, also the additional number required to meet the shortage of class-rooms already existing within the school system.

6.2 School Transport Facilities:

Information is requiring on special arrangements for school transportation intended to facilitate the access of children and young people to schools of various levels and types.

6.3 School Lodging Facilities:

Relevant data about hostels, dormitories etc. should be gathered regarding the number of pupils at each level and type of education who avail these facilities. It will enable the planer to forecast the financial implications of an extension of the boarding school system.

6.4 Scholarship Fellowship etc:

Data should be collected about the pupils for all levels and types of education who are provided financial support.

7. COST OF EDUCATION

7.1 Basic Data:

Recurring expenditure on education by public authorities

7.1.1 Data is required concerning recurring expenditure on education by public authorities, central or federal government provincial or state government, city, district or other local authorities. The expenditure should be distributed by categories such as, salaries of teachers, school text books, maintenance and operation of building (fuel, light, water etc.) auxiliary services, health, feeding, transportation lodging etc.) scholarships and grants by levels and types of education. With this data in hand a planner can estimate the per pupil cost while projecting the operational cost of educational programmes.

7.1.2 Capital Expenditure on Education by Public Authorities:

Regarding the capital investment in education data is needed about expenditure made by various authorities for construction of school buildings and for purchase of durable equipments, at various levels and types of education.

7.1.3 Loans Repayment and Interest Changes, Related to Educational Expenditure:

This type of information also deals with capital investments for education, but as distinct from the previous item, which concerns investments directly paid for by the relevant authorities. Data are needed about the yearly costs to the various public authorities for debt service, interest payments, rotating to investments for educational purposes.

7.2 Private Expenditure for Education

Where expenditure for the operation of private schools to a certain extent is met by subsidies from governments or public bodies, all private schools should provide the central education authority with appropriate data about their expenditure reporting at the same time the amount of public subsidies received. Besides, the operational costs for public and private schools there is another type of expenditure related to education borne by parents for sending children to school, e.g. school books, supplies, transportation, lodging etc. it may be possible to collect this data by means of sample surveys of households.

8. SOURCES OF ERRORS IN STATISTICS

While collecting statistics of any kind, the errors can occur. These can be divided into five main categories:-

- 8.1 Errors of coverage
- 8.2 Errors in collecting and reporting
- 8.3 Errors in compiling and processing
- 8.4 Errors in sampling
- 8.5 System in sampling
- 8.6 How to manage and control error

8.1 Errors of Coverage of Data

Most serious are errors that involved coverage. Sometimes the definition of what should be covered is not clear and different are completely omitted. This phenomenon is also common in census taking.

8.2 Errors in Collecting and Reporting of Data

Errors are found in collecting and reporting of data. In the questionnaires terms are vague, the questions are complicated or not fully understood by the data providers, either through lack of training on their part.

Other errors arise when misinterpretation is given sometimes intentionally, for example when a school budget depends on the number of students reported or else unintentionally, when a census taker although will intentional, may be so overworked that little attention is paid to the completion of questionnaires. Questionnaires may not be satisfactorily structured and therefore their importance may not be stressed.

8.3 Errors in Treatment of Data (Compiling and Processing)

Errors are often made during the treatment of data i.e. in compiling and processing, sometimes through misinterpretation, through erroneous calculation, while tabulating or in the rounding off the numbers. This type of error is very common when data are treated by simple methods.

8.4 Errors in Sampling of Data

The errors in sampling occur when a sample is not representative due to its insufficient size or the manner in which it is drawn. Sometimes the error can be allowed for, if the nature of the error is known. It can partly be diminished by experienced statisticians choosing the most appropriate method of sampling and analyzing the data. The errors can also be classified as systematic or fortuitous ones.

8.5 System Errors

Systematic errors are the more serious one, for they can completely invalidate the work. The fortuitous errors are usually small and often cancel each other out. An educational planner will always have to work with data which are to some extent erroneous. If he cannot correct the errors he must at least be aware of their extent, which means the need for contact with statisticians knowledge of methods of data collection and treatment and a careful study of all questionnaires used.

8.6 How to Manage and Control Error

It is not possible to eliminate all sources of error. However, our continued efforts at understanding and managing variability and error ensure we are exercising a high level of control on all known sources of error through the targeting of resources to control the efficiently and effectively.

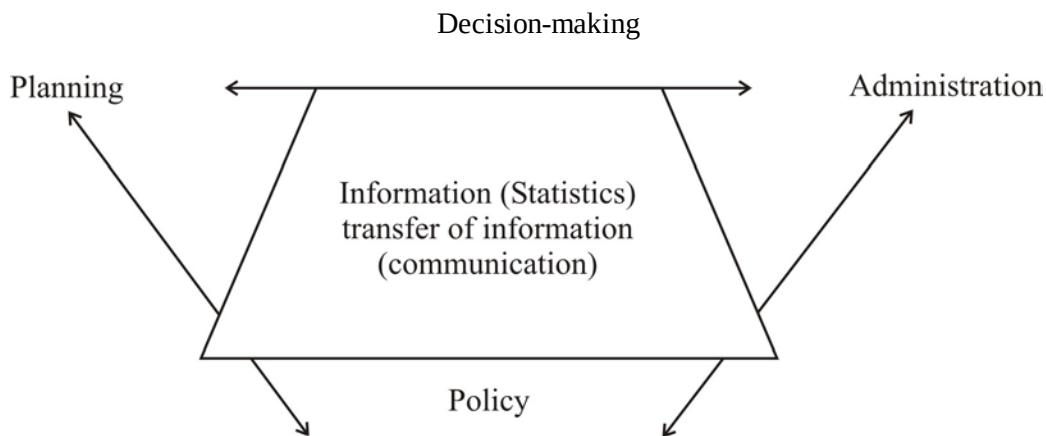
There are five key aspects to control of error:

1. Keep focused on simple measureable objectives.
2. Thoroughly test the tools for data collection before they are used.

3. Follow up non-respondents and consistently achieve high response rates.
4. High quality edit and imputation procedures in the processing systems of data collection.
5. Transparent and open about methods.
6. Use standard procedures and processes at all stages of the data collection process.
7. Invest resources which are economically possible.

9. STATISTICS AND THE DECISION-MAKING PROCESS IN EDUCATIONAL PLANNING

The central function of statistics (one component of information) in the decision making process in education appears thus.



Statistics is one part of the information and communication network which integrates the functions of the decision-making process in education (i.e. policy, planning and administration), since policy maker in the field of education do not base their decisions on planning models alone but on all types of quantitative and qualitative information available. The concept of statistics for educational planning include all quantitative and descriptive information which are helpful in the development of decision in education.

Planning of educational “futures” will need information systems which go beyond statistics to meet routine operational needs. Such information systems will have to serve the exploration of alternative long-term strategies, the evaluation of policy and programme implementation and the integration of policy planning and administration.

It is necessary to gradually aim at developing the statistical support of two important links between planning and decision models in education and the real world.

- (i) Link the results of systematic analysis, forecasting, programming and evaluation of the educational system with policy formulation.
- (ii) Demystify the teaching/learning relations (the instructional process) and link them to their macro-consequence aggregate educational plans and programmes.

10. CONCLUSION

In this unit various types of statistical data needed for educational planning have been described. It is clear that the statistical analyst can do more than furnish descriptive statistics about the educational system.

Through the interrelationships of the various data enumerated a statistical analyst can focus upon certain strengths and weaknesses in the educational system. He can also demonstrate trends and changes observed.

Some of the inter-relationships that serve the educational planner are very basic e.g. Demographic and pupil's statistics relate the application of formal education to the age group eligible and thus are essential in determining the quantitative status of education in relation to the potential demand for education.

The relationship between the labour and various types of education throw light upon the ability of the educational system to supply the human resources necessary statistics of teachers and pupils together help to measure the efficiency of school system itself.

Cost and economic data show the investment in education related to the economic capacity of the society and can help to set a target for future education investment.

These are a few of the numerous possibilities for fruitful statistical analysis for educational planning. It is to be remembered that the process of educational planning does not operate in an educational 'vacuum' and the statistics needs must likewise include information concerning the relevant factors influencing and influenced by the basis for and the results of educational planning.

11. BIBLIOGRAPHY

1. Jchesswas, "Basic data needed for educational planning" in GZ Bereday and J.A Lauwregy (eds) *educational planning world year book of education*, Evans Bros (1967)
2. Dr. Ingvar Werdelin, *Educational Statistics methods and problems* (Beruit, 1964-65)
3. UNESCO, *manual of educational statistics* (Paris: UNESCO, 1961).
4. UNESCO, *Statistics for educational planning*.

12. SELF ASSESSMENT QUESTIONS

1. Why statistics is important for an educational planner?
2. What are basis on which the data on education is collected?
3. Please define the stock data and flow data.
4. In what categories the educational statistics is classified?
5. Prepare a perform to collect the data of your organization, school, college or institute for future planning.
6. Why the data on school facilities is very important or an educational planner?
7. How the data on teachers is collected?
8. While collecting statistics of any kind what kind of errors can occur?

ANSWERS TO QUESTIONS

- Q. 1 Please see paragraph 1
- Q. 2 Please see paragraph 2
- Q. 3 Please see paragraph 3
- Q. 4 Please see paragraph 5
- Q. 5 Do yourself
- Q. 6 Please see paragraph 7
- Q. 7 Please see paragraph 6.2
- Q. 8 Please see paragraph 9

Unit–8

MATHEMATICAL MODELS AND DATA REQUIREMENT FOR EDUCATIONAL PLANNING (UNESCO Material)

Revised by:
Mrs. Rashida Parvez
Reviewed by:
Dr. Aisha Akbar

CONTENTS

S.No	Description	Page No.
	Introduction.....	155
	Objectives	155
1.	Model.....	156
2.	Types of Models.....	157
3.	Presentation of Models.....	158
4.	Classification of Mathematical Models.....	160
5.	More Suitable Model for Education	161
6.	Educational Simulation Model.....	162
7.	Methodology of ESM.....	164
8.	Statistical Data Requirement of ESM.....	167
9.	Teacher Demand and Supply	173
10.	Educational Costs	174
11.	Conclusion	178
12.	Self-Assessment Questions	180
13.	Recommended Readings	180

INTRODUCTION

The educational models consist of the application of well known methods of statistical projections programming and quantitative analysis used in many diverse fields of research but not widely used as yet in educational planning process.

In this unit an effort has been made to develop a tool for educational planners and policy makers to free decision making from the limitations imposed by quantification. The quantitative implications of decisions directly related to educational policy such as teacher-pupil ratio, teacher qualifications, scholarships etc., can be demonstrated very quickly using the models.

OBJECTIVES

After going through this unit you will be able to:

1. Define a Mathematical Model and explain its uses;
2. Classify models according to different aspects;
3. Understand the characteristics and aspects of ESM;
4. Identify the types of data required for use in simulation models;
5. Breakdown the different kinds of data for use in educational planning.

1. MODELS

Many managerial decision-making situations in organizations are quite complex. So, managers often take recourse to models to arrive at decisions.

Model: The term ‘model’ has several connotations. The dictionary meaning of this word is “a representation of a thing”. It is also defined as the body of information about a system gathered for the purpose of studying the system. It is also stated as the specification of a set of variables and their interrelationships, designed to represent some real system or process in whole or in part. All the above given definitions are helpful to us.

Modeling: Models can be understood in terms of their structure and purpose. The purpose of modeling for managers is to help them in decision-making. The term ‘structure’ in models refers to the relationships of the different components of the model.

In case of large, complex and untried problem situations the manager is vary about taking decisions based on intuitions. A wrong decision can possibly land the organization in dire straits. Here modeling comes in handy. It is possible for the manager to model the decision-making situation and try out the alternatives on it to enable him to select the “best” one. This can be compared to non-destructive testing in case of manufacturing organizations.

Objectives of Modeling

The objectives or purposes which underline the construction of models may vary from one decision-making situation to another. In one case it may be used for explanation purposes whereas in another it may be used to arrive at the optimum course of action. The different purposes for which modeling is attempted can be categorized as follows:

- i) Description of the system functioning.
- ii) Prediction of the future.
- iii) Helping the decision maker/manager decided what to do.

The first purpose is to describe or explain a system and the processes therein. Such models help the researcher or the manager in understanding complex, interactive systems or processes. The understanding, in many situations, results in improved decision-making. An example of this can be quoted from consumer behaviour problems in the realm of marketing. Utilising these models the manager can understand the differences in buying pattern of household groups. This can help him in designing hopefully, improved marketing strategies.

The second objective of modeling is to predict future events. Sometimes the models developed for the description/explanation can be utilized for prediction purposes also. Of course, the assumption made here is that the past behaviour is an important indicator of the future. The predictive models provide valuable inputs for managerial decision-making.

The last major objective of modeling is to provide the manager inputs on what he should do in a decision-making situation. The objective of modeling here is to optimize the decision of the manager subject to the constraints within which he is operating. For instance a materials manager may like to order the materials for his organization in such a manner that the total annual inventory related costs are minimum and the working capital never exceeds a limit specified by the top management or a bank. The objective of modeling, in this situation, would be to arrive at the optimal material ordering policies.

2. TYPES OF MODELS

Models in managerial/system studies have been classified in many ways. The dimensions in describing the models are: (a) Physical vs. Mathematical, (b) Macro vs. Micro, (c) Static vs. Dynamic: (d) Analytical vs. Numerical and (e) Deterministic vs. Stochastic.

Physical Models:

In physical models a scaled down replica of the actual system is very often created. These models are usually used by engineers and scientists. In managerial research one finds the utilization of physical models in the realm of marketing in testing of alternative packaging concepts.

Mathematical Models:

The mathematical models use symbolic notation and equation to represent a decision-making situation. The system attributes are represented by variables and the activities by mathematical functions that interrelate the variables. We have earlier seen the economic order quantity model as an illustration of such a model.

Macro vs. Micro Models:

The terms macro and micro in modeling are also referred to as aggregative and disaggregative respectively. The macro models present a holistic picture of a decision-making situation in terms of aggregates. The micro models include explicit representations of the individual components of the system.

Static vs. Dynamic Models:

The difference between the static and dynamic models is vis-à-vis the consideration of time as an element in the model. Static models assume the system to be in a balance state and show the values and relationships for that only. Dynamic models, however, follow the changes over time that result from the system activities. Obviously, the dynamic models are more complex and more difficult to build than the static models. At the same time, they are more powerful and more useful for most real life situations.

Analytical Numerical Models:

The analytical and the numerical models refer to the procedures used to solve mathematical models. Mathematical models that use analytical techniques (meaning deductive reasoning) can be classified as analytical type models. Those which require a numerical computational technique can be called numerical type mathematical models.

Deterministic vs. Stochastic Models:

The final way of classifying models is into the deterministic and the probabilistic/stochastic ones. The stochastic models explicitly take into consideration the uncertainty that is present in the decision-making process being modeled. We have seen this type of situation cropping up in the case of the milk marketing federation decision-making. The demand for the products and the milk procurement, in this situation (please refer section 10.3) are uncertain. When we explicitly build up these uncertainties into our milk federation model then it gets transformed from a deterministic to a stochastic/probabilistic type of model.

3. PRESENTATION OF MODELS

There are different forms through which models can be presented. They are as follows:

- 1) Verbal or prose models.
- 2) Graphical/conceptual models.
- 3) Mathematical models.
- 4) Logical flow models.

Verbal Models:

The verbal models use everyday English as the language of representation. An example of such model from the area of materials management would be as follows:

“The price of materials is related to the quantum of purchases for many items. As the quantum of purchases increases, the unit procurement price exhibits a decrease in a step-wise fashion. However, beyond a particular price level no further discounts are available.”

Graphical Models:

The graphical models are more specific than verbal models. They depict the interrelationships between the different variables or parts of the model in diagrammatic or picture form. They improve exposition, facilitate discussions and guide analysis. The development of mathematical models usually follows graphical models. An example of a graphical model in the area of project management is given in figure.

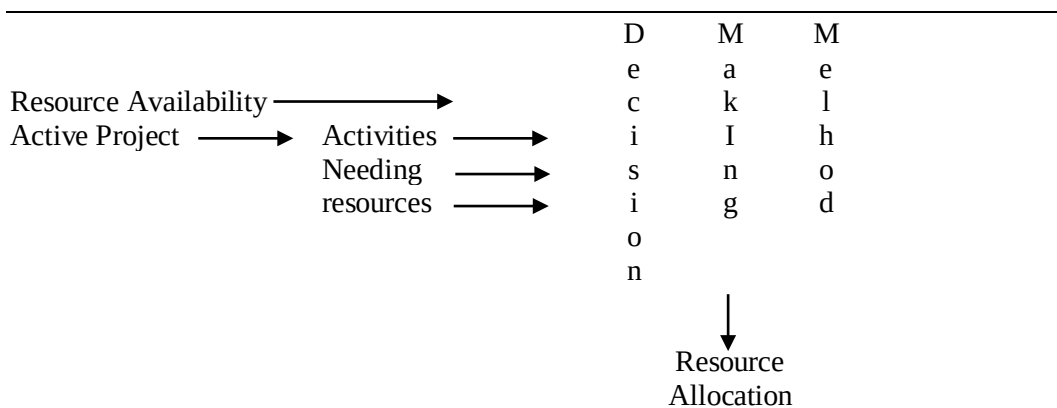


Fig. 1: A diagrammatic model of decisions-making for Resource Constrained Projects

Mathematical Models:

The mathematical models describe the relationships between the variables in terms of mathematical equations or inequalities. Most of these include clearly the objectives, the uncertainties and the variables. These models have the following advantages:

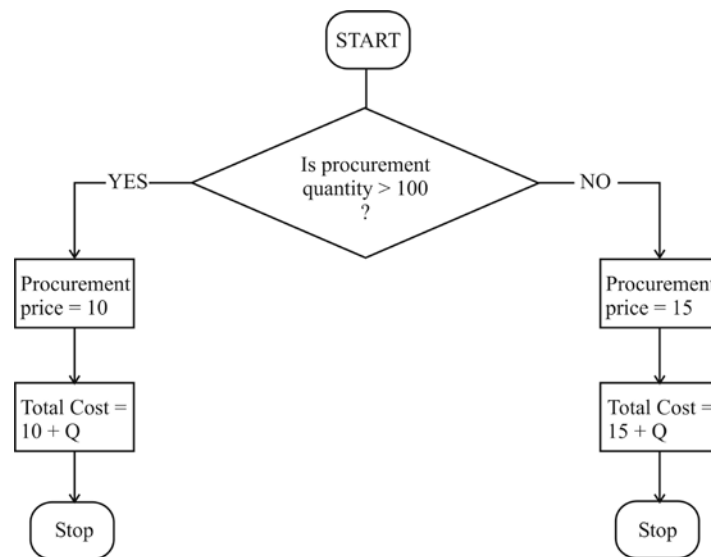
- 1) They can be used for a wide variety of analysis.
- 2) They can be translated into computer programs.

The example of a mathematical model that is very often used by managers is the Economic Order Quantity (EOQ). It gives the optimal order quantity (Q) for a product in terms of its annual demand (A), the ordering cost per order (C_o), the inventory carrying cost per unit (C_i) and the purchase cost per unit (C_p). The model equation is as follows:

$$Q = \sqrt{(2 * A C_o / C_i * C_p)}$$

Logic Flow Models:

The logical flow models are a special class of diagrammatic models. Here, the model is expressed in form of symbols which are usually used in computer programming and software development. These models are very useful for situations which require multiple decision points and alternative paths. These models, once one is familiar with the symbols used, are fairly easy to follow. An example of such a model for a materials procurement situation with quantity discounts allowed is as given in figure.



A logical flow model for material procurement decisions with quantitative discounts allowed.

4. CLASSIFICATION OF MATHEMATICAL MODELS

Models are of different types corresponding to the different purposes for which they have been constructed. One obvious classification is by the major fields of application i.e. economic, demographic, manpower, educational etc. Within the field of education following criteria may be useful to classify the models.

5.1 The level of decision-making concerned national, regional or sub-regional

5.2 Scope of the model

5.3 Purpose of the model

5.4 Mathematical structures and characteristics of the model

4.1 Models According to Level of Decision Making

At the decision making level the models can be distinguished as macro-models and micro-models. *Macro-models* can be designed for use at the level of national planning or for fairly large sub-divisions in a country. *Macro-models* are designed for a specific institution, a particular project, etc.

It should be noted that a macro-model does not limit itself to treating all of a country's educational activities as one aggregate but can deal with any disaggregation. The disaggregation can be by level and type of education, by private and public sector, rural and urban areas, by provinces and sub-regions in, country, etc.

4.2 Models According to Scope

According to the scope of the models, there are two categories: First, there are models that relate education to other social or economic sectors, in the sense that the future behaviour of the educational system is considered as a function of economic and social development, i.e. GNP growth, manpower requirements etc. Second, there are models that deal with the education sector by itself which describe the internal relationships within the sector only. The second type of model can be further divided into two groups: Comprehensive educational models, dealing with all aspects of the educational system and partial educational models, dealing exclusively with some parts or aspects of the education System e.g. student's flow, financial resources requirements, teacher demand and supply, school building requirements, etc.

4.3 Models According to Purpose

According to the purpose the models can be distinguished as:-

- i) forecasting or prediction models and
 - ii) simulation models
-
- i) The purpose of forecasting or prediction model is to generate a set of forecasts on what a system will be like in the future. Models attempting to derive educational requirements from economic development targets usually fall under this category.
 - ii) Simulation models mainly identify the consequences of changes in defined conditions affecting the behaviour of the system. In the Case of educational model,

these conditions will be changed in educational structures: e.g. introduction of compulsory education, assumption regarding, admissions, repetition and promotion; changes in the distribution of pupils by type of education etc.

Simulation models are designed to test various alternative hypothesis, to experiment with various options and to investigate (in a consistent and systematic way) their implications and feasibility. We can say that:-

A simulation model is simply a tool for tracing various alternative, feasible paths.

4.4 Classification of Models According to Mathematical Structure and Characteristics

From the point of view of mathematical characteristics of the model, we can divide it in two parts, i.e. deterministic models and stochastic models.

1. *Deterministic models* describe process without statistical variations. With a deterministic model for each alternative path there is one and only one set of results.
2. *Stochastic models* include random variables and give a range of results for each alternative with their statistical distribution. Theoretically stochastic models are better suited to social phenomena than are deterministic models, as social phenomena are clearly probabilistic.

5. MORE SUITABLE MODEL FOR EDUCATION

Models are idealized representation of real world situation. By idealized, we mean that a model is simpler than the reality that it is intended to represent.

Models have a great many uses. Basically, they can help us to gain an understanding of the way in which manmade or natural systems operate and thereby help us to explain why things are the way they are. They help us to decide on the data that should be collected to analyse particular problems and how these data should be used.

Since the main use of a model is an operational tool that can be used by planner and whose results can easily be interpreted a simple mathematical formulation is an advantage. Moreover, as education is a rather complicated system in which all the inter-relationships are not yet well known e.g. probability of certain changes in repetition patterns due to prolongation of compulsory education or due to an increase in the qualifications and salaries of teachers, etc., an introduction of probabilistic elements may well not add anything real to the validity of the results while giving the impression that we have a perfect knowledge of the actual functioning of the system.

The UNESCO ESM has been designed as a simple flexible model which can serve as a tool for educational planners to trace the quantitative implications of alternative educational options and strategies.

6. EDUCATIONAL SIMULATION MODEL

6.1 The simulation models are mathematical models, which in general identify the consequences of changes in defined conditions, affecting the behaviour of the system. In case of a simulation model for education, these conditions may include changes in education structure by introduction of compulsory education, changing the assumptions with regard to repetition, promotion and drop-outs and by introduction of changes in the distribution of pupil by level or type of education. That is to say that simulation model will tell the behaviour of other variable like finance, number of teachers, number of schools, etc; of a country intends to introduce compulsory education. Similarly with the help of simulation models, we can determine the effect of bringing the drop-out rate to zero.

6.2 In order to study the educational structures in different countries experts in UNESCO designed a simulation model. The purpose and use of this model is to identify various feasible alternative paths for development. This model is designed in such a way that impossible alternatives are automatically eliminated. An example of the impossible alternative may be the expansion of secondary education without expanding primary education.

6.3 As any model, Educational Simulation Model, (ESM) is by definition an approximate and simplified picture of reality. With regard to the level of decision-making concerned, ESM is a macro model and should be used accordingly. It is not designed to provide understanding at an institutional or project level. Problems, such as the location of schools in a particular area, or the allocation of available resources within a school district, or the utilization of teachers and equipment within a particular institution, etc. clearly fall outside the scope of ESM and other types of micro models should be used in dealing with them.

6.4 From the point of view of scope, ESM is comprehensive educational model as it covers all levels and types of education (including non-formal education) in any disaggregation that is meaningful for national planning in terms of enrolment flows, teachers, costs and output from the educational, system. It has been designed as-an autonomous educational model in the sense that it does not attempt to derive educational development from economic or social criteria.

6.5 The fact ESM has been designed as an autonomous educational model does not exclude the possibility of identifying some links with what may perhaps be called the “environment” of education, e.g. demographic growth, socio-economic development, financial flows, manpower considerations, etc. In fact some of these “links” have been tested already, on an experimental basis, and will be discussed subsequently. The main point, however, is whether education can be considered merely as a function of economic and social development or whether it should be considered as an autonomous (or, rather, semi-autonomous, or relatively autonomous) system, having its own internal logic, although it certainly has some identifiable links with some other systems.

6.6 The approach selected for the design of ESM is to treat education as a relatively autonomous system where links with the “environment”, i.e. with other systems, can be identified but where the development of education has its own inherent logic and its own relative independence and is not just a passive reflection of the development of other systems (demographic, socio-economic, manpower, etc.)

6.7 As has already been mentioned, education serves very many objectives. These objectives may be strictly economic (to provide qualified manpower in the right “educational mix” to meet the development of the national economy), political (to promote civic awareness and active participation in political life, or simply to satisfy the aggregate demand of individuals for education, etc.), social (to increase social mobility, to provide equality of educational opportunity to every citizen, to improve, the quality of life and individual welfare), or cultural (to abolish illiteracy, to increase the educational level of the population, to increase the awareness of national cultural heritage, etc.).

The choice, or preference, among the various objectives is a matter of value judgment, a matter of policy, and, often, a matter of ideology.

6.8 ESM was deliberately designed as “neutral” to policy or ideology, i.e. neutral to priorities between educational objectives, since it only simulates the consequences of various assumptions. In other words, any preference, priority, or hierarchy between objectives of education can, if explicitly stated beforehand, be taken into account at the phase of evaluation of the results of various alternatives, where it can be used as the criterion, or series of criteria, for evaluation. It is not, however, introduced in the model itself. This gives flexibility in the application of ESM.

6.9 ESM is thus no substitute for educational planning and, needless to say, it has nothing to do with what is sometimes called, with some exaggeration, “pushbutton planning.”

It is just a tool for the planner, which frees him from tedious and time consuming calculations and gives him the opportunity to concentrate on the more creative task of analyzing and evaluating the results of series of alternative development paths, of revising the original assumptions in the light of the results obtained and of selecting the optimal path using his own judgment and taking into account the priorities and preferences of the policy makers.

6.10 The design of ESM is as a deterministic model and so it is more modest and less elegant but probably reflects in realistic way our present state of knowledge and does not mean that there are not some probabilistic elements which could beneficially be introduced into ESM and future development lies along these lines.

7. METHODOLOGY OF ESM

The fundamental concept and main part of the model is the study of flows of population through the educational system (enrolment). The other parts of the model (teachers, costs and output) make it possible to evaluate the consequences, in various fields, of the value of these flows.

7.1 Mathematical Structure of an Educational System

In order to construct a simulation model of education, it is necessary first of all to define a mathematical structure representing an educational system. This mathematical structure should be sufficiently general to permit, without adaptation, simulation for various countries with different educational systems.

In general it is possible to distinguish the following elements in educational systems:

- the educational course;
- flows of pupils (or students) from one course to another;
- the relation between population outside the system and those within the system.

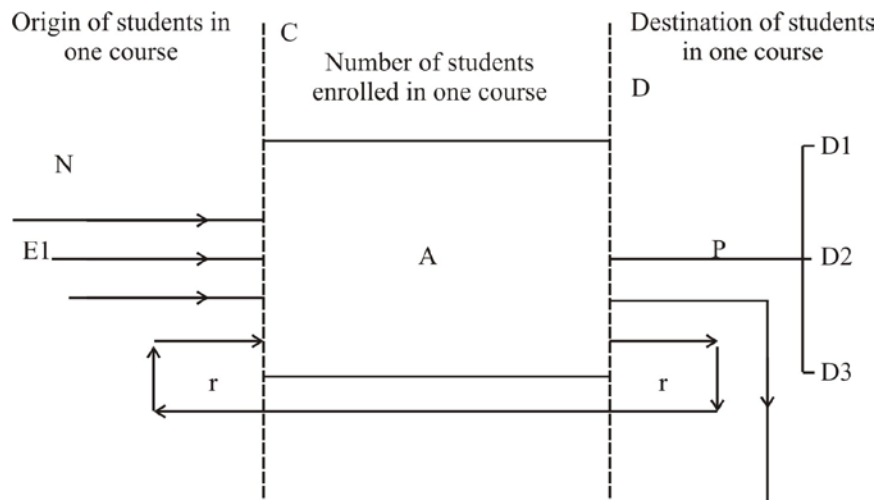
It is thus possible to take a mathematical structure of an educational system a graph whose summits represent educational courses and whose arrows represent the direction of movement of population within the system and outside it. The following chart gives a generalized structure of an educational system, showing the original destination of students in one course.

7.2 This structure integrates two fundamental aspects of an educational system:-

The Static Aspect:- to each identified educational course corresponds the enrolment in this course. The state of the system is thus defined in relation to enrolment.

The Dynamic Aspect:- the educational system is considered as being fixed during each time unit, which is generally one year. Its evolution takes place only between two time units and is defined by a set of rates which determine the flows of population within the system as well as the flows to and from outside the system.

ORIGIN AND DESTINATION OF STUDENTS IN ONE COURSE



The students (A) who come into a course consist of:-

- New pupils coming into the course from outside the system (N).
- Pupils coming from lower level courses (E1, E2, etc.).
- Pupils who repeat the same course from last year.

The students (A) flow out of a course consist of:-

- Pupils who repeat the course next year (r).
- Pupils who leave the system (c).
- Pupils who leave the system (o).
- Pupils who continue in the system (p) and are distributed between different courses (D).

Each step of simulation thus consists of applying a set of rates to populations to find the new values of enrolment corresponding to the new time unit, and consequently to determine the new state of the system.

This mathematical structure is thus a convenient support for simulating flows of population which enter the system, move through it and leave it.

It is now necessary to specify the variables and the relationships which define the state and the evolution of the system. There are two kinds of variables: static variables, the values of which determine the state of the system; and dynamic variables, which determine the evolution of the static variables at each time units of simulation.

7.3 Variables and Relationship Determining Enrolment:

As already noted, the educational course (a time unit of study-a year-within a particular type of study) is the basic cell of the educational structure; let “c” be the identification of an educational course ($c = 1, 2, \dots, n$). For each course it is possible to identify by t the type/level of study corresponding to this course which permits the aggregation of enrolment to obtain total enrolment in a country or a region.

Enrolment in each course “c” for each year of simulation “y” is further identified by age of students say “a”. For each course, the enrolment specifying the age of students (age-specific enrolment in a given year) correspond to the possible number Of students in a particular age ‘a’ in this course. This entire phenomenon is represented by the variable.

$$E_{y}^{c,a},$$

E = Enrolment

Y = the year of enrolment

c = the course of which enrolments are being considered

a = the age at which the students are likely to enroll in the course “C.”

8.4 Outside the educational system, population ‘p’ relevant for entry, is identified by age. It is possible to envisage several points of entry into the system (for example, to cover non-formal education) but the bulk of new entries into an educational system usually occur at the initial course of that system.

Two key variables have thus been identified:-

$$E_{y}^{c,a} \quad \text{and} \quad P_{y}^a$$

Where $E_{y}^{c,a}$ denotes enrolment in course c in year y of the children aged 'a' years

and P_{y}^a denotes the population aged 'a' years in the year 'y'.

8.5 It is obvious that the entire population aged 'a' years shall not enroll in the particular course 'C'. This course shall attract only a part of this population P_{y}^a for this

ratio another variable eve $E_{y}^{c,a}$ is introduce where $c \leq e \leq 1$. For finding out the number

of persons aged 'a' enrolling in course 'c' in year 'Y' we shall find out e_{y}^c, a_x, p_{y}^a .

The variable E will vary cording to course, age and the year.

6.6 The main purpose of this methodology of ESM Model is to regard school education as a system through which a flow of pupils proceed from grade to grade and type to type. The use of modern computers also gives great flexibility by allowing rapid quantification of policy alternatives not only for a target year of levels of education but also for all grades and types of education.

The ESM Models consist of the application of well known methods of statistical projections programming and quantitative analysis proved in many diverse fields of research but not widely used as yet in the educational planning process.

The quantitative implications of decisions directly related to educational policy such as pupil-teacher ratios, teacher qualifications, scholarships etc. can be demonstrated very quickly by using this method with modern computing equipments. In other words:

The model represents a tool that can simulate dynamics of future consequences of changes in any quantifiably defined conditions affecting the educational system.

8. STATISTICAL DATA REQUIREMENT FOR ESM

The main purpose of the UNESCO Education Simulation Model is to simulate the quantitative consequences of changes in defined conditions affecting the educational flow as to design a suitable educational strategy.

This being so the accuracy of the results of the simulation will necessarily depend upon the accuracy and quality of the basic data available and used in the derivation of inputs of the model.

This does not mean, however, that the model application has to be, limited to countries where all the necessary statistics are readily available in the form in which they are required. In fact, one of the indirect uses of the model is the identification of the nature and form of the data that are most important in educational planning.

The ESM is modular and can be considered as composed of three parts:

- (1) enrolment and output
- (2) teacher demand and supply and
- (3) costs

which to a certain extent can be used independently. The statistical data requirements can also be best considered under these three headings.

8.1 Enrolment and Output

The methodological concept of ESM is to regard education as a system through which a flow of pupils proceeds. Hence the starting point of the data requirements is a complete flow chart of the educational system of the country. This helps to identify the different levels or cycles of the system (e.g. primary, secondary, higher education), the types of education that are provided at each level (such as general, agricultural, commercial, teacher training etc. at second and third level) and the path of flow of pupils from one level to another, together with the levels and types of education that are terminal (onward flow of pupils from these level-types is not possible).

Normally these charts are available at the Ministry of Education but they will have to be checked to make sure that the chart represents the complete formal system of education in the country. In some cases the flow chart readily available may not include technical or vocational education which is under the control of another ministry or of separate departments in the same ministry. In others the chart may be limited to the public educational system only and may exclude the privately-managed part of the educational system, which can be substantial. In many cases the post-secondary education may not include the part under the universities and higher technological institutes.

There can be some differences between boys and girls in the pattern of flow, in that some types of education may be relevant only for boys and others only for girls. All these will have to be collected and an overall flow chart of the educational system constructed. It may be advantageous to include also the non-formal education provided in the country and link it with the formal education system.

For the purpose of the application of the model it may be, necessary, depending upon the capacity of the computer, to group some types of education, in secondary and third level, especially if the number or types is large. The grouping may be done on the basis of similarity of type of education or, better still, on the basis of the values of the educational variables, which will be discussed below.

The data requirements for the first part, i.e. enrolment and output, are discussed under the following headings:

- i) Enrolment in the base year.
- ii) Population projections and first-time beginner's grade enrolment ratio.
- iii) Repetition, promotion and drop-out fates.
- iv) Distribution of tracer from one level to a higher level.
- v) Demographic survival rates and migration.

8.2 Enrolment in the Base Year

The base year can be taken as the latest year for which the enrolment data for all identified levels and types of education are available. The enrolment in all levels of education, by types and grades, is an input for the model. If the simulation is required disaggregated by sex, urban rural or region, etc, then the corresponding detailed enrolment in the base year will have to be obtained.

The enrolment data available in the published statistical reports cannot usually provide all the details required. First of all, the data for the latest year may not be available in published form. These will have to be obtained from the statistical offices of the Ministry of Education. Even then they may not cover the data on certain types and levels of education such as technical/vocational, teacher training, higher education etc. These will have to be collected from the ministries or departments concerned and the university administration. Special care needs to be taken to include the enrolments in private institutions of different types and levels, which may not be included in official statistics but can be obtained directly from these institutions if they are few in number or from the relevant departmental records or publications such as the annual reports of the institutions.

8.3 Population Projections and First-time Beginner's Grade Enrolment Ratio

The model assumes that entry into the formal educational system usually occurs only once and is, by definition, at the beginning grade of education. The possible demand for entry is the population cohort of the entry age. The proportion of a proper single-age cohort which enters the school system (first grade of primary) is expressed by the first-time beginning grade enrolment ratio. This is not to say that the model cannot be used in situations where the entry into the system takes place in grades other than the first. The model is flexible enough to take this into account. For each such new entry point the information on entry ratios has to be collected and calculated as explained in the next paragraph.

Generally, the legal age of entry into school is five or six years and the actual entry into grade one, especially in developing countries, is composed of pupils aged from five to nine or ten years. However, from the age distribution of the actual entry into grade one, for the last few years, the 'model' age can be ascertained and, to simplify this age can be

taken as the age at which entry to grade one takes place. An alternative to this approach would be to construct an artificial 'cohort' which would not differ in any meaningful way from the size of the 'model' age cohort since the first-time entry into the school system can obviously occur only once and those entering school at the age of five, for example, are no more relevant for first-time enrolment when they reach age six, etc.

For the base year, the new entrants to the first-grade in that year divided by the population of 'model' entry age gives the first-time beginning grade enrolment ratio.

The number of new entrants to the first grade is not the same as the enrolment in the first grade as the enrolment figures include not only the new entrants but also the repeaters from earlier cohorts.

The enrolment figures have to be adjusted for the repeaters to obtain the new entrants, if the new entrant's figures are not separately available.

Once the first-time beginning grade enrolment ratio for the base year has been obtained, this has to be projected until the end of the period of simulation, taking into account the past ratio of growth of this ratio, the educational policy of the country on primary education and other relevant factors...Needless to say, if the simulation is to be done at a disaggregated level the enrolment ratio has also to be obtained for the level disaggregation envisaged.

The single-year age population of the country is another input. The single-year school age population for the projection period is necessary. Usually these projections are available from the census authorities of the country. Four variants of population projections, namely 'low', 'medium', 'high', and 'constant' fertility rates have been prepared by the UN Population Division for all countries. Any one of these population projections can be used in the simulation. However, the choice will depend on the purpose of the simulation exercise. If the purpose of the exercise is to bring out the effect of different population growth rates on educational enrolment, or output or cost, then separate simulations will have to be done using all or at least two ('low' and 'high') of the population projections. However, if the main purpose of exercise is to simulate the consequences of alternative educational strategies, then only one population alternative need be used, which is usually the 'medium' alternative.

8.4 Repetition, Promotion and Drop-out Rates

The flow of pupils through the system is identified in the model by the following criteria: a pupil repeats the same grade, the following year, he proceeds (promoted) to another grade or course the following year, or he leaves the system, of those who leave the system a further identification is made, namely, those who leave upon successful completion (commonly referred to as drop-outs). However, the model as formulated at present does not separately identify the school-leavers into 'successful' and 'unsuccessful' leavers. Those who leave the system at the end of an educational cycle are taken as corresponding to the successful leavers and those who leave at other grades as unsuccessful leavers or drop-outs. The repetition, promotion and leaving rates measure these aspects of the student flow.

The repetition rate is the proportion of repeaters in a given grade to the total enrolment in that grade in the previous year, i.e.

$$r_y^g = \frac{R_{y+1}^g}{E_y^g}$$

where r = repetition rate
 R = No. of repeaters
 E = enrolment
 g = grade
 y = year

The leaving rate is the proportion of pupils leaving the system in a given grade in a given year to the enrolment in that grade in that year, i.e.

$$l_y^g = \frac{L_y^g}{E_y^g}$$

where l = leaving rate
 (Successful + unsuccessful)
 L = No. of pupils leaving the system

The promotion rate can be obtained as a residual since $P_y^g + r_y^g + l_y^g = 1$, (P_y^g promotion rate in grade g in year y). It is to be noted that those pupils who successfully complete a grade but do not continue in the educational system are not included in those who are 'promoted' but form a part of the school-leavers and are identified separately as 'successful-leavers'.

For the base year, data on repetition rates and leaving rates are to be obtained for the different type of education, for each level and grade. If the simulation is being disaggregated by sex or urban/rural areas, etc. then the repetition rates and leaving rates are to be obtained disaggregated by sex and urban/rural areas.

Generally, repetition and leaving rates for the different educational levels, types and grades are not available in many developing countries. In some cases the relevant data are systematically collected only for first and second level: education and that too is not disaggregated by type of education, sex, etc. Even though systematic data on these aspects are not collected it is possible that relevant data are available, based on special studies that have been carried out for specific purposes by the departments or research organizations concerned.

8.5 Distribution of Transfer from One Level to a Higher Level

In a particular cycle of education, the pupils who are promoted from any grade other than the last grade and continue in the educational system proceed to the next higher grade in the same cycle and continue in the system have the possibility of proceeding to different types of education in the next higher cycle. Therefore, to follow the flow of promotions through the system it is necessary to know their distribution in the next cycle among the different possible types of courses such as arts, science, agriculture, engineering, etc. Such distribution takes place in the case of all cycles, excepting those that are termini and so from which onward flow into other levels of education is not possible. In the model this distribution among different possible types of course is identified by the distribution proportion d_{y^c} .

The data on distribution proportion are to be calculated or estimated for every cycle in the educational system, where the possibility of flow into alternative courses exists. For the base year this distribution proportion can be calculated on the basis of and analysis of the enrolment in the beginning grade of the relevant types of courses after adjusting for the repeaters. The total of the adjusted enrolment will give the total number of promotes and the adjusted enrolment in each type as a proportion of the total types will give the distribution proportion in each type.

It will be useful to calculate this distribution promotion, not only for the base year but also for a number of past years to examine the trends.

The distribution proportion to each type of course for each year of the simulation period has to be estimated. This will mainly be based on the policy in this respect. If the policy is to continue the existing trends then a detailed study of the past trends becomes very important and this has to be extrapolated up to the end of the simulation period, using suitable formulae. However, usually the policy will be not to continue the current trends but to change the distribution in favour of some types of study, e.g. technical, technological and scientific courses. In such cases the distribution proportion for the different courses have to be estimated for each year based on policies in this respect or based on other practical considerations.

It is worthwhile noting that the model can also take account of transfers and distribution other than from the last grade of a level to the first grade of a higher level, as discussed above. It can take account of transfers from any one grade to any other grade within a particular level, provided that the rate of transfer can be calculated or estimated.

8.6 Demographic Survival Rates and Migration

Another parameter that has been identified in the model is the demographic survival rates (s). A certain number of the pupils who enter the educational system die as they pass through the system and demographic survival rates are used to take account of this natural phenomenon. The demographic survival rates are required also to obtain; cumulative stock of educational output during specified periods, say, at the end) of every five years.

For countries where regular population censuses or surveys are conducted or where vital registration data are available these rates can be obtained from the life tables. Usually these rates are available in five-year intervals and can be interpolated suitable to obtain the survival rates corresponding to single-year ages. For countries where such data do not exist the survival rates may be obtained from suitable UN model life tables or from the life tables of countries with similar mortality experience. However, in countries where the mortality rates for the school-age population are not substantial the omission of this factor from the model will not affect the results seriously. (Even then this information will be necessary to obtain the mortality-adjusted cumulative output in different future years.)

Another factor, which can be taken into account in the model, is the migration of students. The necessity for accurate data on the migration of students becomes more important if the simulation is attempted on a regional basis, i.e. by provinces or districts or by urban/rural, etc. This is so because migration of students from one country to another is not usually significant. However, in countries where regional institutions are located or in these countries that participate substantially in regional institutions situated in another country in the region migration of students at the relevant levels can be important and has to be taken into account. But migration of students within a country from state to state or region to region is very important.

At the national level, migration of students can be of some importance at the higher education level. Depending upon the development of higher education facilities in the country, students will be immigrating for further studies.

The required input is the number of net migrants to the system, classified by type and level.

It is possible to obtain the information from the records of the Ministry of Education which gives the number of students, by type study, going abroad for studies and the number who enter the country for studies.

For simulation by regions, or rural/urban, etc. the net migration data required will cover all the levels, types and grades since between regions and between rural/urban areas of a country migration is more numerous than migration between countries. Moreover, these data are more difficult to obtain because such data are not available consolidated at the national level. Special studies will have to be conducted to obtain the necessary information, which may not be possible within a short time.

However, in studies on the application of the model under-taken up till now no account was taken of migration because, all, with the exception of Sri Lanka, were at the national level, and in the case of Sri Lanka no reliable data on internal migration were available.

9. TEACHER DEMAND AND SUPPLY

This part of the model simulates the teacher requirements for the various alternative simulations of enrolment, under different alternative teacher use patterns. The total stock of teachers needed in any year is calculated by linking it to enrolment through student teacher ratios. The model is flexible enough to utilize more detailed data if available. The teacher requirements can be disaggregated by qualification, if in addition the distribution proportion of teachers by qualification obtained. Further, to estimate additional teacher requirements in one year, the demographic survival rates, retirement rates, leaving rates of teacher to other professions, and entry into teaching from other professions are required.

For the base year, the student teacher ratio for different levels and types of education can be calculated from the data on enrolment and the stock of teachers, which are generally available. The number of teachers and the enrolment has to be in terms of full-time equivalents. The part-time teachers and the part-time pupils have to be converted into full-time equivalents on the basis of information's on the time disposition of part-time teachers and pupils, which may be ascertained by discussion with concerned authorities if not already documented. In the case of technical and vocational education and higher education, the relevant data may not be available in the official statistics of the ministries of education and may have to be obtained from the relevant departments and university administration. There can be wide differences in the student/teacher ratio between public and private institutions and also between institutions in urban and rural areas.

The data on distribution of teachers by qualifications for different levels and types of education are more difficult to come across. The teachers, especially in general primary and secondary education, are classified not only by their general educational qualifications but also by whether they are trained teachers or not. This distribution can be obtained from the records of the ministries of education. In countries where this is not collected, the possibility may be explored of the existence of such data based on special studies or surveys, which could be used to estimate the likely distribution. This is also an aspect of the model which has not yet been applied in any country situation but is expected to be of use in the future.

Once the base year student/teacher ratio, distribution proportion of teachers, etc. have been arrived at, these have to be projected for each year of the simulation period. This has to be done on the basis of the educational targets for these parameters which might already have been fixed in the national development plans or based on the general policy of the country.

The total stock of teachers and the annual teacher requirements simulated for the different alternatives give the corresponding demand for teachers. The corresponding supply will be available as teachers in the next year. Of course, the available number of teachers will depend on the labour force participation rates of the output. There has to be a balance between teacher requirements and teacher output. The imbalance can occur in two ways:

- (i) the output is in excess of the demand,
- (ii) the demand is in excess of the supply.

In the case of output being in excess of the demand, the enrolment simulation can be adjusted, in a second run, by suitably changing the corresponding distribution proportion going into the type of teacher education which is in excess, such that the demand and supply match to the expected degree. Alternatively, the corresponding student teacher ration can be decreased, in the simulation of teacher requirements, so that the two figures match.

10. EDUCATIONAL COSTS

The third part of the educational simulation model is the costing of educational flows. Alternative cost patterns can be simulated through this part of the model, corresponding to each of the alternative simulations of the educational flows of the first part. Educational costs here include recurring costs and capital costs and these two are simulated independently.

10.1 Recurring Costs

The basic concept used for costing educational flows is the unit cost. In the case of recurring costs, the unit is the pupil. Recurring costs per pupil are the total of costs per pupil of relevant identified components.

The following are the constituents of the recurring cost:

- i) Teacher salary
- ii) Personnel cost, other than teacher salary.
- iii) General administration.
- iv) Maintenance and operation of educational establishment.
- v) Books
- vi) Welfare (school meals, uniforms, etc.).
- vii) Auxiliary (transportation, health care etc.).
- viii) Scholarship and stipend.
- ix) Instructional materials, other than books.
- x) Central administration (not attributable to the aggregation of courses).

10.1.1 The above list is only illustrative of the items which may be taken into account in the calculation of recurring costs. It in no way means that all these items in the form listed above have to be taken into account. The number of items and their nature will depend upon the availability of data in particular situations. If, for example, the data are available only on teachers' salaries and all other¹ costs put together, even then the model can use these data to arrive at the recurring costs for the system. However, it is worth mentioning that it is better to break down the total per pupil cost into as many components as possible, depending upon the availability of data.

10.1.2 *Teacher Salary*: Teacher salary forms a major part, of the total recurring cost for all levels and types of education. In the case of first level education it usually forms about 80 per cent of the total recurring cost and its percentage contribution decreased as the level of education rises. Average teacher salary; classified by the level of disaggregation envisaged is the required input for the model, i.e. average teacher salary by level and type of education for the country as a whole or classified by rural and urban areas, public and

private institutions, etc. The average teacher salary for a particular level and type of education divided by the pupil-teacher ratio gives the per pupil teacher cost.

10.1.3 The sources of information on teacher salaries are the following:

1. *Statistics of educational expenditure classified by items of expenditure, identified separately, include teachers' salaries.* These data if available classified by type and level of institutions will be best source of information for all types of institutions and managements. The total salary expenditure divided by the corresponding number of teachers will give the average -teacher salary.
2. *The annual budget estimates of the concerned ministries and universities* show the actual and anticipated expenditure for the previous year and current year, respectively, on teachers' salaries, together with the number of teachers by types and levels of educational institutions. This information can be used to estimate the average teacher salary of teachers in public schools.
3. *The existing pay scales of teachers, by qualification indifferent levels and types of institutions,* are sometimes available in published form or can be obtained from records of the ministries of education, universities, etc. These may also be available from recent reports of commissions on pay revision, etc. These data may cover both public and private institutions and only public. If, in addition, the average length of service of teachers is available, the average teacher salary can be estimated. To this should be added the allowances including pension contribution, etc. depending upon practices in different countries to arrive at the average teacher cost.
4. *Estimates of average teacher salaries* of different qualifications and levels and types of education may be available in special studies and surveys conducted for specific purposes.

It may not be possible to obtain the needed information for all levels and .types of institutions from any one source. Information from all sources listed above could be used to arrive at the needed data and to cross-check it. Discussion with the authorities concerned will also be very useful.

The main difficulty is in obtaining data for non-government institutions. If no data on teacher salaries are available for thorn, these may have to be estimated, as a proportion of the teacher salary of corresponding public school/college teachers.

The teachers' salaries vary not only with the level and type of education and between private and public institutions, but also with the educational and professional qualifications of teachers and the number of years of service. So the average teacher salary for particular level and type of education has to be obtained as a weighted average of the average annual teacher salary for each category of teachers, the weights being the number in each category. In calculating the average teacher salary for each category of teachers, not only the basic pay but also the allowances paid such as house rent cost-of-living allowance, pension and provident fund contributions, etc. have to be taken into account. It is not easy to obtain all this data from any one source but a concerted effort to collect them from various sources will generally be fruitful.

10.1.4 *Other Items of Recurring Cost*: The individual per-pupil cost for each of the other items, other than teacher cost, listed above is usually very difficult to obtain. In such cases, the per-pupil cost of those items for which data are readily available can be separately identified and the balance of the items can be pooled together to form what can be termed as 'other per-pupil cost'. The sources of information are also more or less the same as listed in the case of teachers' salaries. But the main source will be the statistics on educational expenditures, and discussion with the relevant authorities who will be able to highlight the limitations of the data in expenditure statistics. Information on per-pupil cost of books supplied free, welfare cost and scholarship and stipend costs can be obtained from the relevant records of the ministries concerned. The data on the central administrative expenditure will have to be obtained from the budget of ministries of education and other concerned ministries.

The recurring cost components have to be calculated for each year of the simulation period, based on the data for the last year and their trends in the future. In estimating the future yearly average teacher salaries, and other costs per pupils, the likely changes in the structure of costs and also likely real increases have to be taken into account. The 'other costs' in relation to teacher salary may increase as the equipment and supplies in schools are improved. The average teacher salaries may increase not only because of increases in the service of the incumbents but also because of increasing pay scales. All these factors are to be taken into account in projecting future unit costs. It is better to avoid the estimation of costs at current prices by using constant prices. It is not easy to foresee the trend of prices in the long term.

10.2 Capital Costs

As in the case of recurring costs, in determining capital costs, the basic concept in unit terms; in this case the unit being a pupil place. The unit per-pupil-place capital cost can be divided into many components. In the model, the following components have been identified:

- i) Cost of site per unit area
- ii) Cost per unit area for building teaching and common facilities.
- iii) Per-pupil-place area requirements for teaching and common facilities.
- iv) Cost per unit area for laboratories and workshops.
- v) Cost per pupil place for furniture and equipment,
- vi) Proportion of existing pupil places to be replaced every year.

As in the case of recurring costs, the above list of components of capital costs is only illustrative of the type of components which can be identified. However, the model is flexible enough, depending upon the availability of data, to have a smaller or larger number of components. The number of new pupil places to be constructed and the rate of replacement have to be estimated for each year of the projection period.

The sources of data on the components of the cost per-pupil-place are the following:

The public works departments and the department dealing with school buildings in the Ministry of Education will be the main sources of information, together with the international regional school-building institutions.

From these sources it should be possible to obtain data on all components. These cost per place will vary, not only by the type and level of institution, but also according to the place where the school building is constructed and also the construction type, i.e. whether the buildings to be constructed are of the permanent type or semi-permanent type, etc. and on the materials used. The average cost per pupil-place will have to take account of these variations.

The cost per place has to be projected for each year of the projection period as an input, this projected per-pupil cost has to take into account the changing norm, if any in pupil-place requirements, including laboratories and equipment and the consequent increase in costs. It will be better to calculate the capital costs in terms of constant prices.

To calculate capital cost, information on the number of new pupil places to be built every year is also required. The number of new places to be built every year, classified by level and type, of education, etc. will be the same as the additional number of students to be enrolled in the courses each year and can easily be calculated from the enrolment projections of the first part of the simulation. It has to be noted that the yearly new place requirements will be equal to yearly additional enrolments only on the condition that the existing system of shifts continues. If, on the other hand, a two-shift system, then the place requirements will have to be calculated, taking this change into account.

However, if there is some backlog in the construction of pupil-places in the past, then a proportion of this, number has also added to the above to obtain the number of new places to be constructed. What proportion of the backlog is to be added depends on the period within which the backlog is to be covered and this will have to be decided in consultation with the planning authorities in the ministries of education.

The number of pupil places to be replaced depends on the 'construction type' of the various school buildings and their type. To correctly calculate replacement requirements in the base year it is necessary to have the distribution of all school buildings by their life and construction type, and to have this is very rare. However, the rate of replacement can be based on the rate of replacement in the past years and its likely trends in the future.

By adding the total recurring costs and the total capital costs, we arrive at the total cost. Only a part costs are borne by the government. The government's responsibility on these may also vary according to the level and type of education. To calculate government expenditure, the proportion of total recurring and capital costs borne by the government has to be obtained for the base year and for the past few years, to obtain the pattern of change. The likely changes in these proportions in future years are also to be ascertained.

Using these proportions, the government expenditure required for each alternative educational simulation can be calculated. This, together with the available data from plans on the likely Gross National Product of the country and the likely government budget, will enable calculation of whether the simulated educational expenditure is within the possibilities of the country. This will be one way of choosing the educational alternatives, with financial restrictions.

11. CONCLUSION

The ESM has proved to be a useful tool for long-term planning operations (10-15) years. It is not designed for short-term planning e.g. (2-5) years. ESM was shaped to test alternative educational strategies and the consequences of alternative policy decisions.

1. The main and most promising field of the application of ESM Model is a systematic exploration of the impact of alternative educational policies, a description and training in a consistent way. However, in any simulation results are just as good or as bad as the assumptions used and no model can produce valid answers if the set of assumptions used for a given alternative is inconsistent or non-realistic. The only thing that ESM can do in such a case is to eliminate alternatives that are already impossible. Since it does not have any reference function, it does not make any judgment on which results are good and which are bad and leaves it to the planner to evaluate the results in terms of preferences and priorities. It is precisely here that the usefulness of ESM lies. As in most cases it is impossible to judge a priority, what alternative is good and which is bad. ESM represents a convenient tool for the planner to investigate in a consistent and systematic way.
2. ESM can best be used in cases where a considerable amount of detailed investigation's required i.e. for a systematic exploration of the various alternative development paths, or at least for long-term planning under two or more extreme alternatives. From a purely practical point of view, although one alternative takes about 10-15 minutes of computer time, a country exercise with four alternatives the educational system being sub-divided into two sub-systems (by sex, of urban rural, etc.) may represent; as an average, something like two man months for the analysis of base year data, identification of alternatives, coding, card punching, computer time and evaluation of results. By comparison, it would probably require several man-years to do the same exercise using desk calculators.
3. Obviously it is not much use designing mathematical models that require input data that are not available at present and cannot even be made available in the near future. In this sense models have to take into account the possibilities of data collecting. ESM does not in principle ask for most statistical information than that normally required for educational planning. ESM has proved to be flexible enough to adapt itself to situations where more or less detailed data were available.
4. ESM can also be used for exploring an educational strategy that implies changes in the educational technology. Such as the introduction of new teaching media, etc. Although from the point of view of ESM, this would simply represent an educational strategy as any other, the main difficulty in these cases may well be precisely in the

availability of data concerning the impact of the innovation on cost components, pupil teacher ratios, teachers' qualifications student's promotion and repetition rates, etc. It may safely be assumed that there is usually not much sense in exploring the long-term effect of introducing new teaching media unless a measurable improvement in students' flows, or an increase in pupil teacher ratios, or savings in school-building costs, etc. can reasonably be expected, since otherwise this alternative would probably only result in increased total costs of education.

5. Finally, it may be stated at least briefly that in principle ESM can be applied not only 'forwards', i.e. for the future, but also 'backwards', with past data, to identify the probable values of some inputs for which no statistical information is available. This was, in fact, done in Spain where no information on repetition was available, to identify repetition rates corresponding most closely to the patterns of pupils' flows in the past.

12. SELF-ASSESSMENT QUESTIONS

- Q. 1 What are Mathematical Models and how these are classified?
- Q. 2 Explain which is more suitable Model for Education.
- Q. 3 What criteria is used to identify the flow of pupils through the system?
- Q. 4 What is demographic survival and Migration rates and how these are obtained?
- Q. 5 Please discuss the methods to calculate the teacher demand and supply needed in any year?
- Q. 6 What is the purpose of simulation exercise?
- Q. 7 Please define the repetition and promotion rate?
- Q. 8 What constitute the recurrent cost?
- Q. 9 Through, which sources the information on teacher's salaries are obtained?-
- Q. 10 What components of expenditure fall in the category of capital cost?
- Q. 11 How the cost per pupil place is calculated?
- Q. 12 What is the use of ESM Models?

13. RECOMMENDED READINGS

- 1. An Asian Model of Education Development: perspective for 1965-1980. ED.661D. 33/A UNESCO, 1966.
- 2. Application of the UNESCO Educational Simulation Model, Study No. 1. Alternative Educational Projections for Ceylon 1968-1985. UNESCO. SHC/WS/212, 24 February, 1972.
- 3. Application of the UNESCO Educational Simulation Model, (a) Study No.3 Alternative educational projections for Kenya, 1970-1985, UNESCO. SHC/WS/ 1, 3 January, 1973 and (b) Alternative projections of enrolments and teacher stocks in primary schools, UNESCO, May 1974.
- 4. Application of the UNESCO Educational simulation model, Study. No.5. Alternatives educational strategies of Iran, 1972-1991, A demonstration study.
- 5. Simulation Model as a Planning tool. UNESCO Course on Decentralized Educational Planning in the Context of Public Sector Management Reform.
- 6. UNESCO Asia and the Pacific Regional Bureau for Education, Education Policy and Reform Unit (EPR), Handbook for Decentralized Education Planning, Bangkok 2005.
- 7. <http://www.informs-sim.Org/wsc78papers/1978-0090.pdf>

Unit–9

PLANNING PROCESS: A THEORETICAL PERSPECTIVE

Written by:

Dr. Aisha Akbar

Reviewed by:

Dr. Syed Manzoor Hussain

Ms. Tahira Bibi Nousahi

CONTENTS

S.No	Description	Page No.
	Introduction.....	183
	Objectives.....	184
1.	Operational Versus Strategic Plans	185
1.1	Strategy.....	186
1.2	Levels of Strategy	186
1.3	Strategic Management.....	186
1.4	The Strategic Management Process	187
1.4.1	Formulating Strategy	187
1.4.2	Diagnosing Past and Present Performance.....	188
1.4.3	Setting Objectives.....	189
1.4.4	Policies.....	189
1.4.5	SWOT Analysis SWOT Framework	190
1.4.6	Comparative Strategic Alternatives.....	191
1.4.7	Implementing Strategy.....	192
1.4.8	Organizational Factors.....	192
1.4.9	Evaluating and Controlling the Strategic Plan	193
2.	Tools of Planning	194
2.1	Forecasts.....	194
2.1.1	Quantitative Forecasting.....	194
a)	Time-series Methods.....	194
b)	Causal Models.....	194
2.1.2	Qualitative Forecasting.....	195
2.2	Break-Even Analysis.....	195
2.3	Project Planning Tools	195
2.3.1	Gantt Charts	196
2.3.2	Program Evaluation and Review Technique	196
3.	The Planning Framework	197
3.1	Levels of Planning	197
3.2	Stages of Planning.....	198
3.3	Planning Focus.....	199
3.4	The Planning Process	199
4.	Focus of Different Types of Planning.....	202
4.1	Sector Analysis	203
4.2	Management of the Education System.....	203
5.	Self Assessment Questions.....	204

INTRODUCTION

Planning is the process of deciding what objectives to pursue during a future time period and what to do to achieve those objectives. Planning enables a manager or an organization to actively affect rather than passively accept the future. By setting objectives and charting a course of action, the organization commits itself to “making it happen.” This allows the organization to affect the future. Without a planned course of action, the organization is much more likely to sit back, let things happen, and then react to those happenings in a crisis mode.

UNESCO describes educational planning as a continuous systematic process, involving the application and coordination of social research methods, and of principles and techniques of education, administration, economics and finance, with participation and support of the general public in private as well as state activities, with a view to securing adequate education for the people with definite aims, and in well-defined stages, and to providing everyone with an opportunity of developing his potentials and making the most effective contribution to the social cultural, and economic development of the country.

Planning provides a means for actively involving personnel from all areas of the organization in the management of the organization. Involvement produces a multitude of benefits. First, input from throughout the organization improves the quality of the plans; good suggestions can come from any level in the organization. Involvement in the planning process also enhances the overall understanding of the organization’s direction. Knowing the big picture can minimize friction among departments, sections, and individuals. For example, through planning, the sales department can understand and appreciate the objectives of the production department and their relationship to organizational objectives. Involvement in the planning process fosters a greater personal commitment to the plan; the plan becomes “our” plan rather than “their” plan. Positive attitudes created by involvement also improve overall organizational morale and loyalty.

Planning can also have positive effects on the performance of an organization. Studies have demonstrated that organizations stress that planning show very high performance. Planning has a positive impact on the quality of work produced.

A final reason for planning is the mental exercise required to develop a plan. Many people believe the experience and knowledge gained throughout the development of a plan force managers to think in a future and contingency oriented manner; this can result in great advantages over managers who are static in their thinking.

Formal Planning

All managers plan. The difference lies in the methods they employ and the extent to which they plan. Most planning is carried out on an informal or casual basis. This occurs when planners do not record their thoughts but carry them around in their heads. A formal plan is a written; documented plan developed through an identifiable process. The appropriate degree of sophistication depends on the needs of the individual managers and

the organization itself. The environment, size, and type of business are factors that typically affect the planning needs of an organization.

The Planning Horizon: Short Range, Intermediate, and Long Range

The length of the planning horizon varies somewhat from place to place, depending on the specific environment and activity. What may belong range when operating in a rapidly changing environment may be short range when operating in a relatively static environment. In practice, however, short-range plans generally cover up to one year, whereas medium-range plans span at least three to five years, and long range extending as far as 20 years into the future. While long-range planning is possible at any level in the organization, it is carried out primarily at the top levels.

Medium term plans cover the time span between short-range and long-range plans. From a pragmatic standpoint, medium term plans generally cover from one to three or one to five years, depending on the horizon covered by the long-range plan. Usually these plans are derived from long-range plans and short-range plans are derived from medium term plans.

OBJECTIVES

After having gone through this unit, the students will be able to:

1. Describe formal planning process.
2. Differentiate between strategic and operational planning.
3. Analyse different components of strategic planning and strategic management.
4. Highlight the importance of different tools used for planning.

1. OPERATIONAL VERSUS STRATEGIC PLANS

There are two basic kinds of planning: strategic and operational. Strategic planning, also known as long range, comprehensive, integrated, overall and managerial planning, has three dimensions: the identification and examination of future opportunities, threats and consequences; the process of analyzing an organization's environment and developing compatible objectives along with the appropriate strategies with policies capable of achieving those objectives; and the integration of the various elements of planning into an overall structure of plans so that each unit of the organization knows in advance what must be done when and by whom. Operational planning, also known as divisional planning is concerned with the implementation of the larger goals and strategies that have been determined by strategic planning; it is also concerned with improving current operations and with the allocation of resources through the operating budget.

Strategic planning established long-term vision, objectives and strategies required to achieve the objectives. Operational planning is the execution phase. It outlines a framework for implementing the strategies and achieving the objectives. Operational planning covers a one year time frame. It outlines the actions required to implement each strategy. It identifies the resources needed, responsibilities and time frames for implementing actions. Operational plans govern day-to-day business and lay the foundation for preparing the annual budget. Personal objectives are defined at this level. Operational plans involve conversion of strategized goals and objectives into execution. This is the ultimate stage of all business planning processes. It is the defining of a business roadmap on how to achieve the desired outcome. At this stage, it is all systems go as the organization embarks on achieving its goals. Nothing is left to chance. It is also serves as a reality check to test the credibility of the laid down plans, more so a moment of truth. Operational plans are basically plans that focus and cover the day-to-day, week-to-week and monthly operation and running of the business. It is particularly used to cover shorter periods of time and have specific details of how the overall objectives are to be achieved. When designing a set of operational plans there should have a built in flexibility so that it can quickly response to any changes in the business environment or competitors actions. Operational plans are carried out by middle level managers and first level managers as they are the first to see changes and in a good position to comment.

The strategic plan covers a three to five year time frame. Annual reviews are conducted to assess if the plan is on track and if changes are required. An analysis of strengths, weaknesses, opportunities and threats provides a starting point. The strategic plan identifies the performance measures used to monitor progress towards achieving the objectives. Strategic plans are developed by senior management although departments can develop their own strategic plans under the umbrella of the corporate-level plan.

The strategic plan lays the foundation for the operational plan. However, operational planning identifies strengths and weaknesses in the organization that, in turn, influences strategic direction. Neither process is developed in isolation from the other.

The strategic objectives drive the programs and projects at the operational level. Without this linkage, projects cannot secure resources. Performance measures are identified at the strategic level and implemented at the operational level. Each functional area, such as customer service or manufacturing, requires an operational plan to outline actions that will achieve the desired results. Strategic plans are design and mean for long term usually for three years or more. Strategic plans involve a more in-depth and broader view of the overall organization (the need to consider more factors). Strategic planning considers both environment factors on the outside and organization factors on the inside. Strategic planning looks beyond immediate circumstances, where top-management try to project market conditions into the future. It directly refers to a comprehensive plan of action made out to achieve the long-term objectives of the organization. Strategic plans establish long-term intentions while operational plans lay down the short-term action programmes to realize these intentions.

Strategic planning is analogous to top level, long range planning. It is the planning process applied at the highest levels of the organisation, covering a relatively long period and affecting many parts of the organization. Operations or tactical planning is short-range planning and concentrates on the formulation of functional plans. Production schedules and day-to-day plans are examples of operational plans.

However, the distinctions between strategic and operations planning are relative, not absolute. The major difference is the level at which the planning is done. Strategic planning is done primarily by top-level managers; operational planning is done by managers at all levels in the organization and especially by middle and lower-level managers.

Before studying the planning process further, it is necessary to develop a clear understanding of strategy and its various forms. These forms are discussed in the next section.

1.1 Strategy

The word strategy originated with the Greeks about 400 BC; it pertained to the art and science of directing military forces. A strategy outreach lines the basic steps that management plans to take to reach an objective or a set of objectives. In other words, strategy outlines how management intends to achieve its objectives.

1.2 Levels of Strategy

Strategies exist at three primary levels in an organization and are classified according to the scope of what they are intended to accomplish. The three levels are grand, business, and functional strategies.

1.3 Strategic Management

The rapid rate of change in today's world is making it increasingly necessary that managers keep their plans current. Strategic management is the application of the basic planning process at the highest levels of the organization. Through the strategic

management process, top management determines the long-run direction and performance of the organization by ensuring careful formulation, proper implementation, and continuous evaluation of plans and strategies. The essence of strategic management is developing strategic plans and keeping them current as changes occur internally and in the environment. It is possible to prepare a formal plan with a well-defined strategy and not practice strategic management. In such a situation, the plan could become outmoded as changes occur in the environment. Practicing strategic management does not ensure that an organization will meet all changes successfully, but it does increase the odds.

Although guided by top management, successful strategic management involves many different levels in the organization. For example, top management may ask middle and lower-level managers for input when formulating top-level plans. Once top-level plans have been finalized, different organizational units may be asked to formulate plans for their respective areas. A proper strategic management process helps ensure that plans throughout the different levels of the organization are coordinated and mutually supportive.

Organizations that consciously engage in strategic management generally follow some type of formalized process for making decisions and taking actions that affect their future direction. In the absence of a formal process, strategic decisions are made in a piecemeal fashion. An informal approach to strategy, however, does not necessarily mean the organization doesn't know what it is doing. It simply means the organization does not engage in any type of formalized process for initiating and managing strategy.

1.4 The Strategic Management Process

The strategic management process includes setting the organization's mission; defining what business or businesses the organization will be in; setting objectives; developing, implementing, and evaluating strategies; and adjusting these components as necessary. While the basic process is similar in most organizations, differences exist in the formality of the process, levels of managerial involvement and degree of institutionalization of the process.

Although different organizations may use somewhat different approaches to the strategic management process, most successful approaches share several common components and a similar sequence. The strategic management process is composed of three major phases: (1) formulating the strategic plan, (2) implementing the strategic plan, and (3) evaluating the strategic plan. The formulating phase is concerned with developing the initial strategic plan. The implementation phase involves implementing the strategic plan that has been formulated. The evaluation phase stresses the importance of continuously evaluating and updating the strategic plan after it has been implemented. Each of these three phases is critical to the success of the strategic management process. A breakdown in any one area can easily cause the entire process to fail.

1.4.1 Formulating Strategy

The formulation stage of the strategic management process involves developing the top level strategic to be pursued. The strategies ultimately chosen are shaped by the

organization's internal strengths and weaknesses and the threats and opportunities the environment presents.

The first part of the formulation phase is to obtain a clear understanding of the current position and status of the organization. This includes identifying mission.

Defining mission is crucial. It is also more difficult than one might imagine. Peter Drucker emphasizes that an organization's purpose should be examined and defined not only at its inception or during difficult times but also during successful periods. If the railroad companies of the early 1900s or the wagon makers of the 1800s had made their organizational purpose to develop a firm position in the transportation business, they might hold the same economic positions today that they enjoyed in earlier times.

Management must also identify what the future scope will be and what it should be. Drucker presents four areas to investigate. The first is the potential: What does the long-term trend look like? Second, what changes in structure might occur due to economic developments. Third, what possible changes will alter clientele's views? What new ideas might create new demand or change old demands?

General questions to be addressed include the following: Has past strategy been consciously developed? If not, can past history be analyzed to identify what implicit strategy has evolved? If so, has the strategy been recorded in written form? In either case, a strategy or a series of strategies as reflected by the organizations past actions and intentions should be identified.

1.4.2 Diagnosing Past and Present Performance

To evaluate how past strategies have worked and determine whether strategic changes are needed, the organization's performance record must be examined. How is the organization currently performing? How has the organization performed over the last several years? Is the performance trend moving up or down? Management must address all of these questions before attempting to formulate any type of future strategy. Evaluating an organization's performance usually involves some type of in-depth financial analysis and diagnosis.

Once management has an accurate picture of the current status of the organization, the next step in formulating strategy is to decide what the long-intermediate, and short-range objectives should be in light of the current mission. However, these objectives cannot be accurately established without examining the internal and external environments: Thus, establishing the long and intermediate-range objectives and analyzing the internal and external environments are concurrent processes that influence each other.

1.4.3 Setting Objectives

If objectives are statements outlining what the organization is trying to achieve; they give the organization and its member's direction and purpose. Few managers question the importance of objectives; they question only what the objectives should be.

Long-range objectives generally go beyond the organization's current fiscal year. Long-term objectives must support and not conflict with the organizational mission. However, they may be quite different from the organizational mission, yet still support it.

Short-range objectives should be derived from an in-depth evaluation of long-range objectives. Such an evaluation what is expected. Normally, multiple objectives should be sued to reflect the desired performance of a given organizational unit or person. From a top-level perspective, objectives should span all major areas of the organization. A problem with one overriding objective is that it is often achieved at the expense of other desirable objectives. For example, if quantity is the only objective, quality may suffer in attempts to realize maximum quantity. While objectives in different areas may serve as checks on one another, they should be reasonably consistent among themselves.

Objectives should be dynamic; that is, they should be reevaluated as the environment and opportunities change. Objectives for organizations usually fall into one of four .general categories (1) profit oriented, (2) service to customers, (3) employee needs and well-being, and (4) social responsibility. Even nonprofit organizations must be concerned with profit in the sense that they generally must operate within a budget. Another scheme for classifying organizational objectives is (1) primary, (2) secondary, (3) individual, and (4) societal. Primary objectives relate directly to profit. Secondary objectives apply to specific units of the organization (e.g. departmental objectives). Individual objectives directly concern the organization's employees. Finally, societal objectives relate to the local, national and global communities.

1.4.4 Policies

To help in the objective setting process, the manager can rely to some extent on policies. Policies are broad, general guides to action that constrain or direct objective attainment. Policies do not tell organizational members exactly what to do, but they do establish the boundaries within which they must operate.

Procedures and rules differ from policies only in degree. In fact, they may be thought of as low-level policies. A procedure is a series of related steps or tasks expressed in chronological order for a specific purpose. Procedures define in step-by-step fashion the methods through which policies are achieved. Procedures emphasize details. Rules require specific and definite actions to be taken or not in a given situation. Rules leave little doubt about what is to be done. They permit no flexibility or deviation. Unlike procedures, rules do not have to specify sequence. For example, "No smoking in the conference room" is a rule. In reality, procedures and rules are subsets of policies. The

primary purpose is guidance. The differences lie in the range of applicability and the degree of flexibility. A no-smoking rule is much less flexible than a procedure for handling student's complaints. However, a rule can have a clear relationship to an objective. For example, a no-smoking rule may help the organization reach a stated objective of "a cleaner and safer environment."

1.4.5 SWOT Analysis

SWOT Analysis is one of the modern techniques to evaluate an organization or a programme. SWOT stands for Strengths, Weakness, Opportunities, and Threats. Strengths and Weaknesses are identified from within the organization or programme whereas Opportunities and Threats are identified in the environment of the programme. It means that the Strengths and Weaknesses are related to internal aspects of the system, and the Opportunities and Threats belong to external aspects of the system. Based on the facts obtained through SWOT Analysis, it becomes simple to revise the strategies or objectives so that the desired outcomes of the programme may be achieved.

SWOT (Strength, Weakness, Opportunities, and Threats) came from the research conducted at Stanford Research Institute from 1960-1970. The research was funded by the fortune 500 companies to find out why corporate planning failed and what could be done about this failure. The study was carried out by Albert S Humphrey and his team. Albert S Humphrey is therefore considered to be the founder of SWOT Analysis.

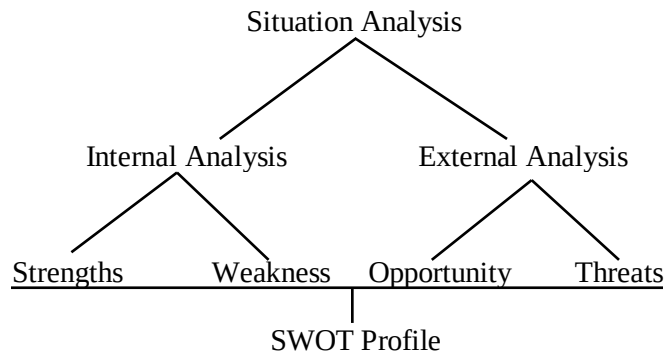
An important advantage of SWOT Analysis is its simplicity; most of the stakeholders can understand the findings of SWOT Analysis without necessarily having much technical knowledge. It further makes it easy to relate the findings, draw conclusions, and develop new strategies in a very simple way. Thus one of the most important merits of SWOT Analysis is that it does not require any specific qualification or technical experience for utilizing its outcomes.

The attractions of SWOT Analysis are that this technique is familiar and easily understandable by users and it provides a good structuring device for sorting out ideas about the future and an organization's ability to exploit that future. The reason why it has become so widely known is because of its inherent attractions, which include the facts that the technique is simple enough in concept to be immediately and readily accessible to managers no computer or management expert is needed. Secondly the model can be used without extensive corporate or market information system but is flexible enough to incorporate these where appropriate. And finally SWOT analysis provides us with a device to structure the awkward mixture of quantitative and qualitative information, of familiar and unfamiliar facts, of known and half-known understandings that marks strategic marketing planning.

SWOT Framework

The SWOT analysis requires an organization to assess its own strengths and

weaknesses. This is considered alongside external opportunities and threats. The following diagram shows how a SWOT analysis fits into a strategic situation analysis.



SWOT profile uses a very simple framework shown in the following figure.

	Positive	Negative
Internal Factors	Strengths	Weaknesses
External Factors	Opportunities	Threats

The SWOT analysis is self-assessment data collection exercise for an organization. It should be followed by more comprehensive analysis which feed into a strategic plan. This should consider how to build on strengths, address the weaknesses, make the most of the opportunities identified, or reduce the impact of potential threats.

1.4.6 Comparative Strategic Alternatives

The goal in this stage of the formulation process is to identify the feasible strategic

alternatives (in light of everything that has been done up to this point) and then select the best alternative. Given the mission and long-range objectives, what are the feasible strategic alternatives? The results of the SWOT analysis limit the feasible strategic alternatives. For example, the results of an internal financial analysis could severely restrict an organization's option for expansion. Similarly, the results of an external analysis of population trends might also limit an organization's expansion plans. Once a set of feasible alternatives has been defined, the final strategic choice must be made.

The evaluation and final choice of an appropriate strategic alternative involves the integration of the mission, objectives, internal analysis, and external analysis. In this phase, management attempts to select the grand strategy that offers the organization its best chance to achieve its mission and objectives through actions that are compatible with its capacity for risk and its value structure. Once the grand strategy has been identified, additional sub strategies must be selected to support it.

1.4.7 Implementing Strategy

After the grand strategy has been carefully formulated, it must be translated into organizational actions. Given that the grand strategy and supporting sub strategies have been clearly identified, what actions must be taken to implement them? Strategy implementation involves everything that must be done to put the strategy in motion successfully. Necessary actions include determining and implementing the most appropriate organizational structure, developing short-range objectives, and establishing functional strategies.

1.4.8 Organizational Factors

Not only does an organization have a strategic history; it also has existing structures, policies, and systems. Although each of these factors can change as a result of a new strategy, each must be assessed and dealt with as part of the implementation process.

Even though an organization's structure can always be altered, the associated costs may be very high. For example, a reorganization may result in substantial hiring and training costs for newly structured jobs. Thus, from a practical standpoint, an organization's current structure places certain restrictions on strategy implementation.

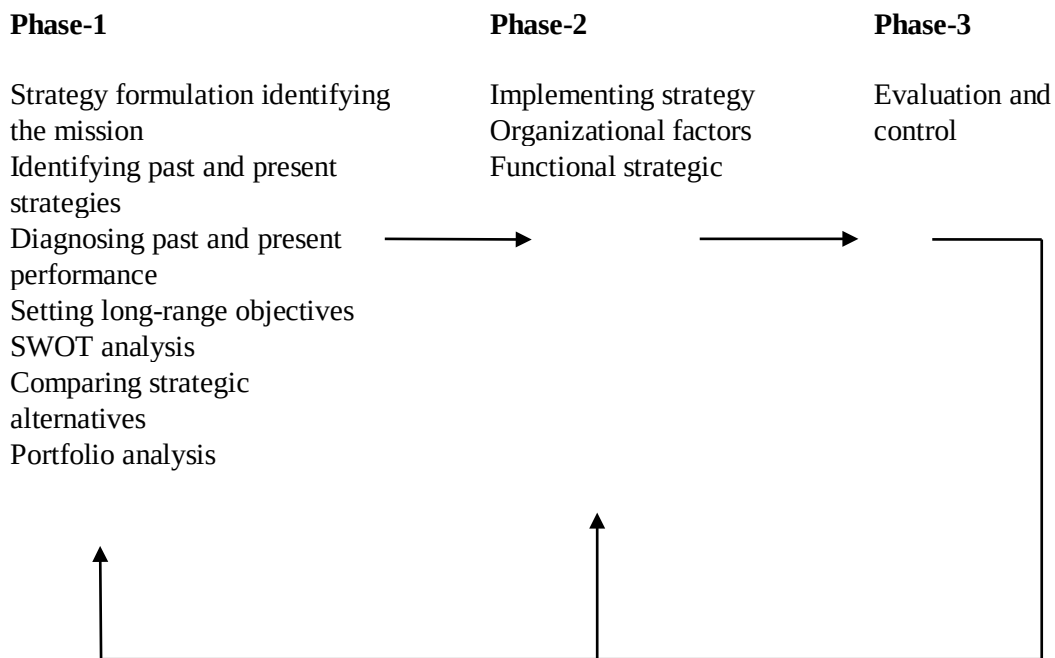
The strategy must fit with current organizational policies, or the conflicting policies must be modified. Often past policies heavily influence the extent to which future policies can be altered.

Similarly, organizational systems that are currently in place can affect how the strategy might best be implemented. These systems can be either formal or informal. Examples include information systems, compensation systems, communication systems, and control systems.

1.4.9 Evaluating and Controlling the Strategic Plan

After the strategic plan has been put into motion, the next challenge is to monitor continuously the organization's progress toward its long-range objectives and mission. Is the grand strategy working, or should revisions be made? Where are problems likely to occur? The emphasis on making the organization's managers aware of the problems that is like to occur and of the actions to be taken if they do arise. As discussed earlier in this chapter, continuously evaluating and responding to internal and environmental changes is what strategic management is all about.

The Strategic Management Process



2. TOOLS FOR PLANNING

Whether they are planning for their own units or for the organization as a whole, managers have a variety of tools available that can enhance and facilitate the planning process. Managers use forecasts, break-even analysis, and project planning tools to support the planning process.

2.1 Forecasts

To guide organizational actions and decisions during the planning process, a manager can make a forecast, a prediction or an estimate of future conditions or events. Forecasting is the process of predicting future environmental conditions based on current data, research, and past experience. Forecasts support planning in every function. Forecasting can be of the following types:

2.1.1 Quantitative Forecasting

Quantitative forecasting is a mathematical method of analyzing the results of historical data (values previously recorded) to determine a pattern that can be projected into the future, cause of its applicability to a broad spectrum of planning situations, including marketing and financial planning, quantitative forecasting is widely practiced. Two common forms are time-series methods and causal models.

a) Time-Series Methods

Managers use the time-series method to identify historical patterns and sequences and to predict how they are likely to recur in a future period. The time-series model assumes that a historical pattern or combination of patterns will repeat over time, so if managers plot the sequence of events during a previous period, they can mathematically project how the sequence might recur in a future period. Time-series methods can be used to describe four types of patterns: trends, seasonal patterns, cyclical patterns, and random patterns.

b) Causal Models

A causal model helps managers predict the behavior of one variable, known as the dependent variable, on the basis of the past interaction of other variables, known as the independent variables. By understanding the historical relationship between the dependent and the independent variables, managers are able to predict how changes in the independent variables are likely to influence the dependent variable. Three frequently used types of casual models are regression analysis, econometric models, and leading indicators.

Regression analysis uses mathematical equations to predict the behavior of the dependent variable on the basis of the current fluctuation of one or more known independent variables. This method can also be used to analyze the impact of potential changes in the independent variables on the dependent variable. The manager of a plate glass manufacturing firm might use regression analysis to predict sales on the basis of factors that cause glass sales to increase or decrease, such as the rate of automobile

production and the number of building permits issued. By substituting higher or lower values for automobile production or building permits, the manager can see how the forecast of plate glass sales changes and can prepare contingency plans for use if those situations occur.

An econometric model is a system of regression equations that together predict how interrelated variables will affect the economy, the organization, and the organization's industry. Although econometric models are useful for understanding complex relationships among multiple variables, they are difficult, expensive, and time consuming to develop.

2.1.2 Qualitative Forecasting

The second type of forecasting frequently used by managers is qualitative forecasting, or judgmental forecasting, a method based on individual judgments or committee agreements about future events or conditions. This is the most frequently used type of forecasting, and it less on mathematical analysis than does quantitative forecasting. Because qualitative forecasting depends on the knowledge and expertise of the managers involved, it is generally less systematic and less objective than other methods, and its effectiveness can be diminished by different decision-making biases.

The Delphi group technique can be used to obtain a qualitative consensus among experts about the most likely pattern of future events. Three other commonly used qualitative forecasting approaches are technological forecasting, the jury of executive opinion, and the sales force composite.

2.2 Break-Even Analysis

To create plans that lead to achieving organizational profitability goals, managers frequently need to consider how certain decisions will affect profits. In such situations, they can use break-even analysis, a quantitative tool that helps managers examine the relationship among costs, sales volume, and sales revenues. By manipulating these elements, managers can determine the break-even point, the level of sales volume that produces sales revenues equal to total costs. As the name suggests, the break-even point occurs when the organization neither loses money nor makes a profit but merely breaks even. At sales volume above this point, revenues more than cover costs, so the organization makes a profit. But revenues from a sales volume below this point do not cover costs, so the organization suffers a loss.

2.3 Project Planning Tools

Large organizational projects often involve many steps or complicated activities that must be carefully sequenced and coordinated. Giant single-use plans can be designed and controlled using project planning tools such as Gantt charts and the Program Evaluation and Review Technique (PERT).

2.3.1 Gantt Charts

The Gantt chart developed by scientific management theorist Henry L. Gantt is a project planning chart that shows the separate activities, their duration, and the current status of each activity in a given project. The entire project's time period is shown along the horizontal axis of this bar chart, and project activities are listed on the left. The beginning, duration, and end of each scheduled activity are shown on the bar chart and a graphical device (shading or colors) allows managers to see at a glance the progress in each activity.

Gantt charts help managers plan projects with many steps and allow them to easily track the completion of individual steps. By checking the chart, managers can quickly tell whether the organization is behind or ahead of schedule, and which activities have not yet been completed. A variety of computer software programs are now available to help managers develop and maintain Gantt charts. However, this planning tool does not take into account the interrelationships among activities. For this reason, complex projects may require more sophisticated planning techniques.

2.3.2 Program Evaluation and Review Technique

The Program Evaluation and Review Technique (PERT) is a planning tool that helps managers identify the optimal sequencing of activities, the expected time for project completion, and the best use of resources within a complex project. This tool was developed in 1957, when the U.S. Navy was grappling with the enormous task of coordinating the thousands of suppliers and activities needed to build the Polaris submarine fleet. By using PERT to view this giant project as a network of related activities rather than as a list of separate, sequential activities, Navy managers could see the potential impact of delays on their projected completion dates.

To use PERT, the manager must (1) identify the activities to be performed, (2) determine the sequence of activities, (3) establish the time needed to complete each activity, (4) draw the network, (5) calculate the longest path through the network that leads to project completion (this is known as the critical path because the project cannot be completed in less time), and (6) refine the network's timing or use of resources as activities are completed.

The following part of the unit is based on the planning guide. This part shows developed by the application of theoretical concept of planning given in the earlier part of the unit to educational planning.

3. THE PLANNING FRAMEWORK

3.1 Levels of Planning

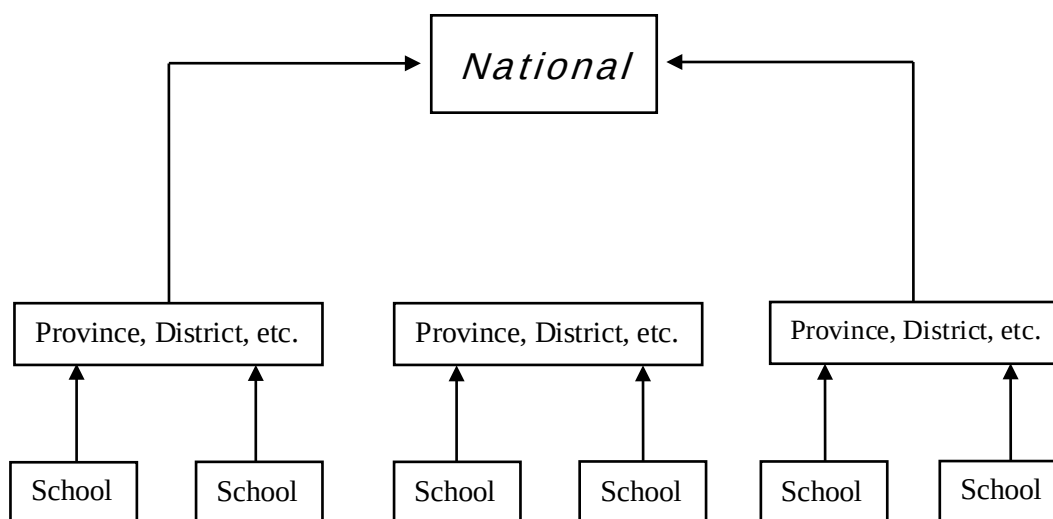
The overriding goal of educational activities is to serve the needs of children in the context of their national, cultural, ethnic, religious, social and economic environments. Consequently, the ultimate aim of the planning process concerned with formal basic education is to serve the needs of children of school age at the level of the school or alternative programme. Therefore, the school level, cluster school level, or community level, can be called Planning Level-I. In order to function, schools need support from higher levels, such as townships, districts, provinces, etc., which is Planning Level-II. These entities, in turn guidance and support from the central, national level which is Planning Level-III.

All three levels have to work together; but each level has specific functions and tasks. Although different systems exist in countries in Asia, the most common structure appears to be the following. Planning Level-I is concerned with matters such as organizing the teaching/learning process and parent and community participation. Planning Level-II is concerned with support, such as teacher training, provision of teaching and learning materials, personnel management, major construction and maintenance to ensure access to education, some resource allocation, efficiency of resource utilization, and mobilizing of funding. Concerns of Planning level-III include ensuring national standards for, and unity (not necessarily uniformity) of, curriculum, textbooks, exams, teacher training, personnel management, resource allocation to ensure access to quality education, resource utilization, ensuring donor relations, and sector reform and development.

In a growing number of countries the planning and tasks of these levels are in a process of change. For example, decentralization is moving many tasks to lower levels, including tasks like teacher training, personnel management, fund-raising, and infrastructure management. The planning concept to be applied in each country will have to be based on a matrix which shows what level is presently responsible for which functions and tasks and then plan for the changes which should occur in this matrix over time.

All three levels are directly involved in short term planning, particularly the annual budgeting process. Medium-term planning requires the involvement of Levels II and III. Long-term planning is usually primarily the concern of Level-III. Drawing up the EFA plan 2002-2015 is a joint task of Level II and III. Through appropriate participatory mechanisms and process, Level I (the level of schools and school clusters) is also involved in planning, particularly in EFA planning. The active participation of level-I is essential when, once the EFA has been adopted, implementation action plans are being prepared.

FIGURE 1: PLANNING LEVELS



Education for All (EFA) Conference held in Dhaka.

3.2 Stages of Planning

Ideally, planning proceeds in three successive stages: each stage corresponds to a particular type of plan: first long-term planning (plan covering ten years or more), then medium-term planning (plan covering three to five years), and finally short-term planning (plan linked to the government budget cycle).

Today, most countries already have a long-term education plan (in a variety of forms: as part of the national development plan, or as a master plan for the different education sub-sectors, or as general education sector plan), which sets the long-term policy goals. By nature, long-term plans are quite general, much more detailed concepts (objectives, targets, feasibility assessments, organization of sector management, etc.) are needed for making resource allocation decisions and for making sure that enough financial, material and human resources are available to carry out activities required to attain the long-term goals. Therefore, many countries are now concentrating their planning efforts on the design of medium-term plans, since they are closer, in terms of both time horizon and detail of content, to resource allocation cycles (such as public sector investment programmes, public sector financing programmes and annual budgets).

The national EFA plan to be prepared for the period 2002-2015 will have typical features of both long-term and medium-term plans. On the one hand, the EFA plan will set overall long term policy goals to be reached by the year 2015; on the other hand, it will also set specific medium-term targets and priorities, and outline implementation programmes for concrete action for the first five or six years of the plan period.

Planning Stage-1: Preparing the long-term plan (also called strategic plan or master plan)

By setting overall policy goals, the long-term plan determines the general, basic concepts and principles for education compatible with each country's intrinsic values, its current needs and future expectations. It outlines the overall resource requirements for the sector in the long run. It is the outcome of political decisions taken in the context of the overall social and economic development policies of the country.

Planning Stage-2: Preparing the medium-term plan

The medium term plan defines what needs to be done, when, how and with what resource inputs, in order to attain the long-term policy goals. It sets specific objectives and targets and outlines implementation programmes and implementation modalities. It contains a finance plan, identifying national as well as external sources of funding.

Planning Stage-3: Preparing a short-term plan (also called implementation plan)

Implementation plans lay details of what will be done, by whom, how, with what amount of resources, and financed by what sources. Usually spanning a period of a new budget years, they are broken down by annual budgets, setting the specific targets to be attained in the context of the fiscal or budget year.

3.3 Planning Focus

In most countries, education planning focuses on a number of key concerns, around which education plans are structured, including;

- (i) access to schooling, i.e. access to the first grade of the primary and secondary education cycle 'and the possibility to complete the full cycle; access to alternative approaches to providing basic education (for those children who have no access to formal basic education); including key factors such as classrooms, teachers, teaching/learning materials, language, an enabling social and physical environment; access to education for girls, and other excluded groups;
- (ii) quality of the teaching/learning process, content, structure of the system, learning achievements, and relevance of the curriculum to cultural, social and economic goals of national development;
- (iii) sector management, including the regulatory framework, resource allocation, resource utilization, policy setting and planning, implementation monitoring and evaluation of results, and decentralization.

3.4 The Planning Process

Preparing an education plan is a process aimed at identifying the most appropriate course of action to address issues, set priority objectives and targets, and provides the basis for cost-effective resource allocation. The plan preparation process consists of a sequence of four phases, including:

Planning Phase-1: Finding the facts about how the sector functions today and identifying issues that need to be addressed in the future, as well as strengths that need to

be maintained or reinforced in the future, and undertaking a sector analysis (also called sector review, sector survey, sector diagnosis) or a more limited situation analysis;

Planning Phase-2: Charting the future, i.e. preparing the plan, by setting policy goals and strategic objectives, formulating implementation programmes, setting targets, assessing resource requirements, setting priorities and designing implementation strategies;

Planning Phase-3: Designing the action by drawing up outline implementation plans. This step has in recent begun to be included in the planning process, particularly in the preparation of medium term plans. Drawing up detailed action plans is not part of preparing long term or medium term plans. Detailed action or implementation plans are drawn up once medium-term plan has been approved by the government and the relevant legislative bodies, and correspond to the first step of implementation of the medium term plan.

Planning Phase-4: Adopting the plan as an official government document with normative status, orienting laws, statutory decisions and budgets (which, as a rule, are legally binding documents, in the same way as other Laws).

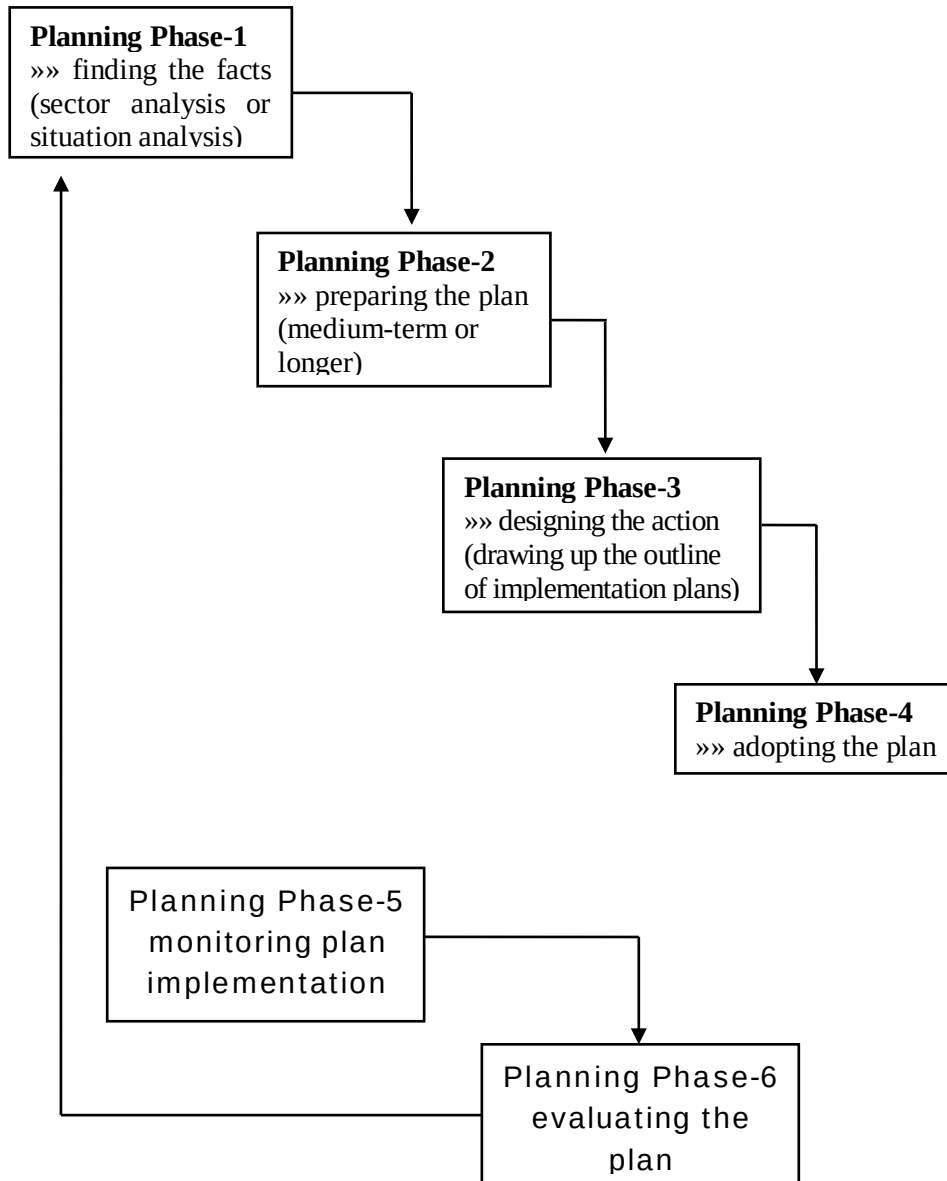
Planning is a continuous process. The planning process also includes monitoring of the” plan implementation, regular updating of sector analysis information, assessing the results and impact of implementation and feeding back this information into adjustments of policies and implementation strategies throughout the period of plan implementation.

Planning Phase-5: Implementing and monitoring the plan implementation. The monitoring information is feed back into the plan implementation process and used to review the plan regularly and adapt it as necessary to changing needs and conditions within the overall planning framework.

Planning Phase-6: Evaluating the plan, including its achievements in terms of reaching stated qualitative and quantitative objectives and targets, producing expected outcomes and impact on priority target groups, as well as its cost-effectiveness. The results of the evaluation are used to improve the planning and policy setting process in consecutive plans.

This planning Guide concentrates on the first four phases that concern the preparation of the plan document.

FIGURE 2: THE PLANNING PHASES OF THE PLANNING PROCESS



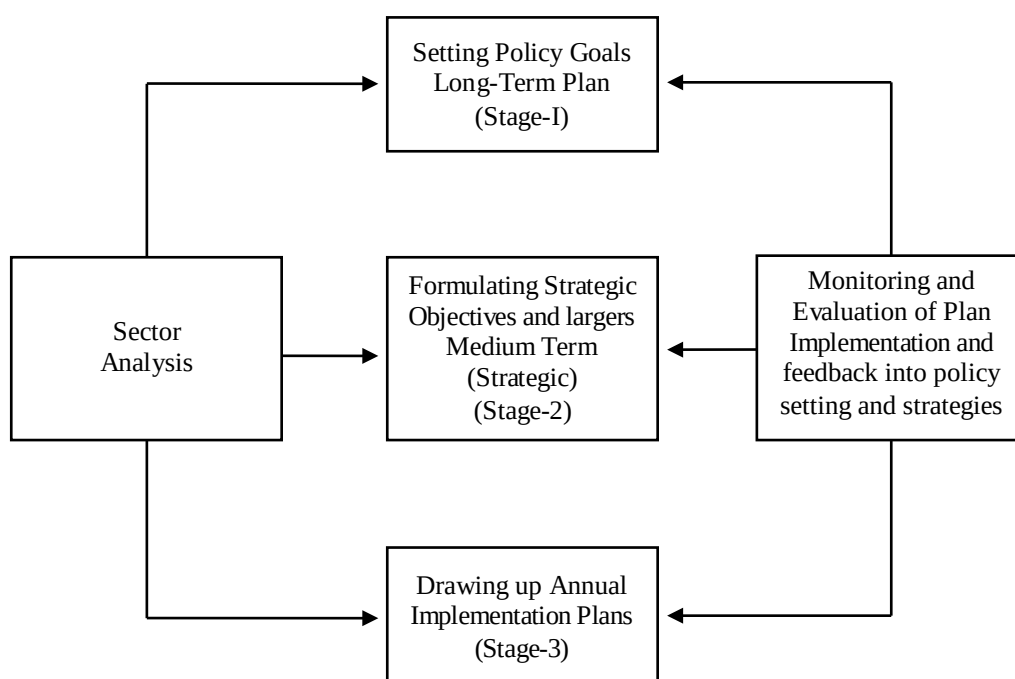
Depending on what type of plan is being prepared (long-term, medium-term or short-term plan) the planning process (i) puts emphasis on different aspects, (ii) involves specific partners and stakeholders as active participants in the preparation of the plan, and (iii) uses specific approaches.

4. FOCUS OF DIFFERENT TYPES OF PLANNING

Long-term Planning, Medium-term Planning, and Short-term Planning

The planning process generates information and provides an overview of the present situation of the education and training system (also called base situation) against which it will be possible to monitor plan implementation and assess performance and impact of programmes and activities. This will permit identifying needs, revising implementation programmes, and then, designing measures to adjust plan implementation as and when needed, and not only when the next plan is drawn up in five or ten years time.

The Planning Framework



Phase-1	Phases-2, 3, 4	Phases-5,6
Of the planning process (finding the facts, identifying the issues and possible responses)	Of the planning process • (charting the future [targets, resource requirements, priorities, strategies] - designing the action, - adopting the plan)	Of the planning process • Monitor plan implementation • Evaluate the plan

4.1 Sector Analysis

A thorough understanding of the current educational situation is the essential basis for formulating the plan. Education sector analysis (also called sector review, sector survey, sector diagnosis) provides this basis. It is a comprehensive analysis of the current situation and functioning of the education and training sector, or of a sub-sector, and therefore the necessary first phase in the planning process. Without being based on sector analysis information, the plan runs the risk of not being sufficiently rooted in reality and establishing unrealistic targets and actions.

Sector analysis consists in the collecting and analyzing of basic data which yield necessary insight into the functioning of the educational system, making it possible to diagnose causes of malfunctioning, underachievement and inefficient utilization of resources (situation analysis). It identifies and helps to understand the major shortcomings, and formulates realistic assumptions about the cause and effect relations that condition the performance of the educational system. Sector analysis also includes the identification of possible responses to the problems.

A typical sector analysis collects information and conducts analysis in major areas and their components:

Performance of the sector (sub-sector); access (admission, transition rates, enrolment rates), enrolment (by gender, geographical area, home language), internal efficiency, learning (by qualifications), physical facilities, teaching/learning materials, curriculum, teaching; methodology, examinations and certification, relevance to manpower needs of the economy, costs, financing; contextual aspects such as the community served by the school, and social demand for educational services. Among social factors are, for example, the social characteristics of the learners, the learning environment and the environment in which the teacher works (his role in the community, social standing, support from sector management services such as resource centers, pedagogical advisory services).

4.2 Management of the Education System

Management of pedagogical services, including teacher training, teacher support services (inspection, resource centers), curriculum and teaching/learning material development; administrative and financial management, including personnel (recruitment, career, salary), budget and expenditure, efficiency of resource utilization, community participation.

Policy management: planning and budgeting, resource allocation, costs of access to education, monitoring, evaluation of impact, donor coordination.

The areas covered by sector analysis may be defined in other ways, such as grouping the components according to criteria which are appropriate for the sector policy environment of the country concerned. A structure often used is: access to education, quality and relevance of education, and sector management (see above Section 1, 2, 3 on Planning Focus).

Undertaking sector analysis results in a number of important side effects that contribute to improving the management of the education system. One is the discovery of weaknesses in data collection, data management and analysis, and in dissemination and use of basic data and analytical information. In a growing number of countries, sector analysis instrumental in identifying the causes of conceptual inadequacies and of non-performance of Educational Management Information Systems (EMIS). Responding to these findings through quick, action can improve the data system, thus strengthening the basis for monitoring of plan implementation and evaluation.

5. SELF ASSESSMENT QUESTIONS

1. State what is the formal planning process?
2. Describe how strategic planning differs from operational planning.
3. Describe the components of strategic management.
4. State how different tools can help a planner.