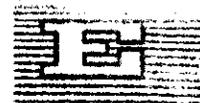


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ECONOMIC ASPECTS OF EDUCATIONAL PLANNING IN CONNEXION
WITH ECONOMIC AND SOCIAL DEVELOPMENT

(Prepared by a Study Group of the Institut d'Etude du
Développement économique et social, Paris, in collaboration
with UNESCO).

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By a study group of the INSTITUT D'ETUDE DU DEVELOPPEMENT
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1. Ever since its creation, Unesco has devoted much effort to the world-wide development of education, especially in the so-called underdeveloped countries where the majority of the population is still illiterate, one of the most glaring inequalities existing in the modern world. These activities not only aim to promote individual and social progress, but also economic growth. It is this last aspect which will be treated in the present paper.

2. It is generally admitted that educational development should be planned, and that such planning should contribute to economic evolution. Illiteracy obviously constitutes an almost insurmountable obstacle in the advance from a subsistence to a modern economy and in the path of those economic changes required before accelerated development can take place. Mass communications can no doubt overcome these barriers: the radio, the cinema and images of all kinds suddenly put the so-called traditional societies in touch with the rest of the world and cause profound changes by diffusing a vastly greater quantity of information than that formerly supplied through the oral tradition and a few spasmodic contacts with the outside.

3. But these changes occasion a sudden rise in expectations without supplying the means towards their fulfilment. They do not contribute to economic development, but manifest themselves rather in the form of tensions and imbalances.

4. Education is the most important means of guiding such changes by diffusing the knowledge and techniques required if the way of life and the mode of production within the traditional sector are to undergo modification, through the training of skilled manpower and management at all the levels necessary to the emergence of a modern sector.

5. It has often been observed that economic development programmes do not achieve their expected results because of a shortage of the skilled manpower to put capital to good use, which in turn results in slowing down the programmes and a low level of productivity.

6. These well-known facts underline the importance of education to economic development and point to the place of Unesco's contribution to the combined efforts of the United Nations and its Specialised Agencies. Moreover, experience acquired over the past 15 years has made possible the definition of the relationship between education and the economy as a whole, and their mutual interdependence.

7. Theoretical concepts have evolved in step with action. To sum up current problems it seems useful briefly to expose important stages and progress to date.

I. THE EVOLUTION OF IDEAS CONCERNING EDUCATIONAL PLANNING

8. In June 1954, at Montevideo, a General Conference of Unesco first stressed the importance of preparing a number of "major projects" to be put into execution in 1957-58. These "major projects" were defined as "... special activities, selected in priority sectors and designed to yield important concrete results with a view to the solution of urgent problems and through the collaboration of different disciplines". One of the three major projects concerns the extension and improvement of primary education in Latin America, especially in rural areas, over a period of 10 years.

9. Apart from the collection of reliable statistical data and very extensive publicity, the chief measures foreseen are:

- the quantitative re-inforcement and qualitative improvement of primary school teaching staffs, especially in rural schools (pre-entry and in-service training);
- instruction for future teacher trainers at the Inter-American Teacher Training School at Rubio (Venezuela);
- university training for education specialists (administrators, inspectors, etc.);
- study seminars for leaders in education.

10. The preparation of so ambitious a project underlines the necessity of going beyond primary education and of planning the entire educational structure. This was the problem to which the first Inter-American Study Group on the Overall Planning of Education addressed itself at its meeting in Washington, 16-28 June 1958.

11. At this meeting, the overall planning of education was defined as "a continuous and methodical process which applies and coordinates social research methods, the principles and techniques of education, administration, economics and finance, with public participation and the support of public opinion, within the public as well as the private sphere, in order to provide for the population, in accordance with progressive and clearly-defined stages, such education as will allow each individual to develop and to contribute fully to the social, cultural and economic development of the country."

12. Starting with this definition, the conference worked out an organizational scheme designed to assist overall planning.

I. ORGANIZATION OF PLANNING PROCEDURES

A) Preliminary steps: 1) setting up a technical service responsible for directing the plan; 2) definition of major targets; 3) intense preliminary publicity campaign in order to gain public support; 4) fixing and co-ordination of the various aspects (qualitative, quantitative, administrative, financial) procedures and planning techniques at the different stages.

B) The steps

1) First step: Working out the Project.

a) Study of the cultural, social, economic and financial situation; b) study of the educational situation; c) definition of educational needs and problems (qualitative and quantitative aspects) and projection of possible solutions in the short, medium and long run; d) preparation of the draft overall plan, including targets to be attained and means to be deployed to this effect, for example: the extension and improvement of education at all levels; the adaptation of teaching and administrative

staff to the new plan; structural reform of the educational system; detailed examination of the necessary administrative and financial means to make the plan operational, etc..

2) Second step: Discussion and adoption of the plan.

This stage calls for public support and collaboration: it includes the survey of financial resources, legal reform, the adoption of necessary administrative reforms and the training of staff required for the plan's execution. It should result in the adoption of the plan by the responsible official organs.

3) Third step: Execution and Revision of the Plan.

The plan should be carried through in accordance with a precise timetable, and a detailed budget and activities programme. During the execution of the plan, it is important to test the efficiency of certain measures and to evaluate the plan, which must allow for adjustments of detail.

4) Fourth step: Evaluation and further Planning.

At the end of the planning period, it is essential to make an overall evaluation based on criteria defined at its outset. To round off this evaluation, it is desirable to seek international collaboration. The comparison of results obtained in various countries allows for the sharpening of evaluative criteria. Ultimately, it is necessary to work out a new plan, based on acquired experience, the evaluation of the results of the previous plan and the revision of targets in keeping with the now situation and fresh possibilities.

II - METHODS AND TECHNIQUES

13. The definition of planning draws attention to the importance of applying, in a co-ordinated manner, all available methods and techniques. This greatly preoccupied the conference, as witness the importance placed on gathering statistics and on the financial aspect of planning.

14. From the statistical point of view, the report recommends coverage of the cultural, social and economic situation in order to ensure the greatest possible degree of coordination. Such coverage is to include the degree of illiteracy, the level of education of the population at large and manpower reserves (attending school, not attending school, according to level of education and profession.) By drawing up combined tables an analysis can be made of the relationship between economic factors and education by comparing general demographic statistics with breakdowns reflecting attained levels within the educational system, for example: active population classified according to profession, sex and level of education; school-age population not attending school classified according to the level of education, profession, the cause of drop-out or non-attendance, and illiteracy.

15. Concerning financial needs and resources, the following are the important recommendations: the needs of the educational sector must be determined by taking into account the increase in population, the constant rise in the cost of living, the regular improvement of educational services and all other factors necessitating budgetary increases. Budgetary estimates should relate to the total expenses over a given period, taking into account the goals set for each level of education as well as current and capital expenditure. Current expenditure budgets should be prepared for several years in advance, on the basis of average annual cost for separate items, so as to permit a degree of flexibility in application. The allocation of resources to the educational sector is best calculated as a fixed minimum percentage of national income; it is further desirable that this figure be raised by at least one per cent of national income annually. The establishment of an Interamerican Educational Fund to finance certain investments through long-term loans was also suggested.

16. Up to this point, matters were entirely in the hands of educational specialists. It was at the International Round-Table in Paris (9-18 December 1959), organised by the Institut d'Etude du Développement Economique et Social and the French National Commission for Unesco, with

the assistance of Unesco, that educators, economists and sociologists met for the first time to discuss the relationship between educational planning and social and economic development (see the special number of the quarterly Tiers Monde for January-June 1960.) The principal questions raised concerned the share of education in national investment and public expenditure programmes, its role in meeting economic development needs through the supply of skills and its task in facilitating social changes during the phase of rapid growth.

17. Development planning may be defined as setting growth agents to work in optimum combinations.^{1/} These agents are of two kinds: material and human. Amongst the latter, education plays a crucial role. The central problem of economic planning may therefore be said to reside in the allocation of resources between competing sectors. The general method is that of successive estimates. If this method leads to several more or less equal solutions, the choice between them must be determined by social and political considerations.

18. In his paper, Prof. Bettelheim outlines a model based on three successive steps, as follows:

1. Examination of the original situation.

This examination includes the quantitative and qualitative assessment of resources and needs. It embraces national income, budgetary resources, human resources, the education and cultural levels, natural resources, foreign aid and needs, both satisfied and unsatisfied. Together, these elements permit the setting up of "desirable" targets over a given period.

2. First projection of a "desirable" situation.

a) the pace of desired and possible economic growth which will allow a certain level of development to be attained (This level may be measured, for example, by per capita annual income.)

^{1/} See paper by C. Bettelheim.

b) educational targets which may be determined by reference to levels already attained where economic development is equal to that aimed at by the end of the period in question. The structure as well as the financial, technical and economic aspects of the educational sector must be defined.

c) technical considerations which would indicate the magnitude of skilled manpower needs called for by the level of development and the economic structure which a country might be expected to possess at the end of the relevant period. This also allows for the evaluation of the subsequent growth of needs as a function of a given rate of development.

d) spontaneous trends which may distort educational resources and needs at the end of the period, in keeping with the considerations set out above.

e) policy assumptions which would tend to deflect, in a given direction, the projection of needs, resources and the educational structure at the end of the period.

In this way, the provisionally selected "educational target" is arrived at. It remains to be determined how the original situation is to be turned into the "final" situation.

3. The attainment of the chosen target.

Possible ways of attaining the target have already been sketched above. In addition, however, certain constraints must be taken into account.

- internal constraints imposed by technical exigencies giving rise to chain reactions, for example, the number of teachers to be trained annually for all levels.

- external constraints imposed by the exigencies of general economic development which engenders temporally specific demands (for engineers, technicians, etc.) limiting the physical and human resources over which the educational sector exercises command.

Compromise between the imperatives of the "final" target and the exigencies of general economic development must be met through precise calculations and successive adjustments. It is in this manner that the appropriateness of one or several possible policies can be determined.

The "educational target" and its attainment must each be subjected to "a priori" as well as "current" control, the latter also serving to formulate subsequent targets and policies.

19. Educational expenditure decisions within a social and economic development plan possess a dual aspect:

A. The origin of educational funds.

It may be said that, as a general rule:

- 1) contributions from internal resources, that is to say those derived from fees and other internal sources, diminish;
- 2) contributions from foreign resources also diminish;
- 3) contributions from national resources originating from central and local government and private institutions vary:
 - a tendency towards decreasing private contributions has been noted, especially in countries undergoing very rapid development;
 - the expenditure pattern as between central and local government almost invariably remains constant, with a tendency towards rising local government contributions in certain African countries (e.g. Uganda) and their diminution in certain Asian countries.

Where a tendency towards the planning of public expenditures and the rapid expansion of the educational system exists, it has been found that it is the central government's contribution which increases the most.

B. Devising Plans for Educational Expenditure.

20. The devising of a plan for educational expenditure depends upon the projection of educational resources. In the under-developed countries, however, the situation is such that, in general, needs far outstrip available finances, which necessitates a choice dictated by the amount of the latter. It is

therefore necessary to seek economic criteria to govern educational investment. Should optimum social production cost or maximum social returns be sought in connexion with a planned educational system?

21. Given the rate of absenteeism and drop-out, the determination of cost is valid only if calculated not for the number of enrolled pupils but for the number of pupils who really benefit from education, which is to say those who terminate a given course in the normal number of years. The problem therefore lies in the existence of a considerable lack of parallel between the financial means deployed and the results obtained. To seek optimum cost is hence equivalent to seeking improved utilization of available resources. It is a question of choice between various measures of a pedagogical, psycho-sociological, political, economic or other character.

22. Thus, if an existing school network which, under current economic circumstances no longer meets rational needs, is examined, operational research enables minimum cost to be arrived at. The high cost of small single-class rural schools with a very restricted number of pupils is due to the under-employment of teachers (staff costs amounting to some 70 to 80% of total operational expenses.) Reforms are possible, either by providing daily transport for pupils or by establishing boarding schools. Cost comparisons indicate the most economic solution. Supposing that this turns out to be the establishing of boarding schools, it is still necessary to take other factors into account, such as the contribution to progress which, in certain countries, can be made by the scattering of schools in small villages and above all by the presence of the local school teacher (who can organise co-operatives, help with agricultural extension schemes etc.) as against the advantages of more centralised facilities promoting contact between villages and the extension of markets.

23. As for the determination of optimum social returns, the political choice is frequently made by reference to the principal aim of a programme, which may be either mass diffusion of fundamental education or the more intensive training of an elite. If the educational system is already fairly advanced, an effort must be made to maintain graduates in jobs desirable, both from their own and from the community's point of view. But the basic condition for full utilization of intellectual resources is to inspire the young generation with enthusiasm for national development. (Paper by E. Löbel submitted to the Paris Round Table.)

24. The conclusions of the Paris Round Table emphasise that:

- 1) the scope and nature of the problems which education must face are unprecedented. While it is necessary to educate all children, the pace of economic growth depends on the development of technical, secondary, higher and adult education, which makes it necessary to choose between alternatives and to set up priorities;
- 2) though it is essential to create a specialised body competently staffed to plan educational development as a whole, the preparation and application of that plan should be decentralised so as to obtain the support of public opinion and of the local authorities;
- 3) economic planning techniques should be applied to educational planning, adjusted to conditions within each country and to present future social changes;
- 4) the adoption of the educational systems and methods of the industrialized countries by the under-developed ones is dangerous. These methods are too costly as well as otherwise inappropriate. Furthermore, reliance upon such borrowings from modern societies, implying the transference of selected features out of their context only gives rise to distortions and profound stresses. It results in frustration and dissatisfaction. Hence it is necessary to draw the leaders' attention to the social implications of technological progress and to aim at the maximum diffusion of elementary instruction amongst the masses.

5) The Round Table recommended that full use be made of all appropriate techniques, not only through the auxiliary use of audio-visual aids and the training of teachers, but also through the organization of co-operatives, the extension of the educational functions of trade unions, the spread of adult education, etc., since the process of rapid cultural change produces rifts between generations, the results of which manifest themselves in the shape of alienation and juvenile delinquency in the social sphere, and also make themselves felt in the economic sphere. Mass education can reduce these rifts which is why sociologists recommend a progressive educational effort to planners.

6) While education meets individual and social needs, it should also meet economic ones. The targets of an educational plan should be geared to precise employment projections. Each educational level should prepare young people to play an active part both economically and socially.

7) If the above conditions are met, education can be considered as a priority investment sector since it forms the indispensable base to economic development.

8) Technical assistance and international aid should contribute significantly to this transitional phase of accelerated growth. It is, however, essential that such aid promote mass education rather than merely benefiting an elite.

25. The Paris Round Table demonstrated the help which educators, economists and sociologists can give each other. The sociologists are correct in their instance that society is a whole, of which both educational and economic features are but parts.

26. The Paris Round Table was held at a time when all the under-developed countries are becoming aware of the importance of the educational problem and are taking measures to effect reforms and evolve development programmes. In January 1960, representatives of 15 Asian countries met in Karachi to establish a programme for universal compulsory and free primary education within twenty years. The aim

is to make 20% of the total population (or 237 million people) literate by 1980. In February 1960, representatives of the Arab States met in Beirut, and those of tropical African States in Addis Abeba to discuss their needs in primary, secondary, vocational and technical education. It transpired, for example, that in tropical Africa, 25 million and not 8 million children should be at school.

27. The General Conference of Unesco passed a resolution underlining the relation between education and economic development (Resolution 8.62 of the eleventh session) and the Executive Board had before it in June 1961 a statement drawn up by four of its members which made a detailed declaration on the role of education in economic and social development. The Executive Board decided (59/EX/Decisions) to authorise the Director-General to draw upon this declaration as he thought fit and to establish in the Department of Social Sciences an Analysis Unit to study the role of education, science, technology and information in economic development. This Unit has since come into existence and is starting upon a programme of study and of documentation utilising both economists in Unesco and outside consultants. A Unit on the planning of education was also recently established in the Department of Education. A manuscript is in course of preparation bringing together the results of Unesco's experience on the planning of education intended for the use of Member States.

The scope of such efforts demonstrates the scope of the problems.

II - CURRENT PROBLEMS

28. The successive steps described above show the progress made in the methodology of educational planning and the necessary administrative structures to put such planning into effect. Such progress, however, itself raises new problems.

29. Firstly, progress has been partial: though the majority of developing countries have undertaken to compile projections concerning the expansion of their educational systems and to calculate their needs in terms of manpower and money, projection methods still vary considerably from

country to country, yielding results of most unequal value. Very few countries have yet succeeded in establishing real educational plans embracing a clear statement of targets, an explanation of the choices, an order of priority, a set of measures affecting all levels of instruction, precise calculation of cost and an assessment of the pattern of financing based upon available resources. Educational plans are linked to economic development in but an imprecise manner, and at the best of times only via financial measures. Generally, educational and economic plans are separately worked out, and their guiding criteria, aims and practical application are different, and sometimes incompatible.

30. Furthermore, such planning as has been undertaken has been mainly concerned with aggregates and quantitative aspects which are not sufficiently sensitive to the complex factors put into motion by education. No doubt, education is an end in itself and its expansion is both individually and socially desirable as such. From the economic point of view, however, this merely leads to wishing that education receives a generous proportion of public money devoted to social ends, in the same way as health or social services. For some time past, it has been suggested that education be regarded as an investment and not as an item of consumption. This assertion cannot yet be rigorously proven since no satisfactory correlation between the portion of national income allocated to education and per capita income or the growth rate of the gross national product has yet been established for the industrial countries.^{1/} This may be explained by the fact that education cannot be taken in the aggregate: while it certainly has costs, it also has an efficiency which cannot yet be measured in quantitative terms, as is done for industrial productivity (manhour product).

31. Thus, in order to assimilate education to growth models, it will be necessary to possess not only quantitative data relating to cost but also to economic returns. It will thus become possible to determine rationally what portion of national income or of investment resources is to be allocated to education, in keeping with the chosen developmental

1/ See especially:

- a) F. Edding: Internationale Tendenzen in der Entwicklung der Ausgaben für Schulen und Hochschulen, Kiel 1958.
- b) OEEC : Economic Growth and Investment in Education, Paris, Oct. 1959
- c) OEEC : Targets for Education in Europe, by Svernilson, Edding and Elvin, Oct. 1961, particularly p. 96 and 134.

rationality what portion of national income or of investment resources is to be allocated to education, in keeping with the chosen developmental aim. The attainment of this situation is as yet remote, since qualitative criteria by which an educational system can be evaluated are lacking. Educational planning thus calls for further progress in research. The following are the chief problems before Unesco and the research institutions active in the new field known as the "economics of education".

EDUCATION AND GROWTH

32. Over the past years, economists have been led to the study of the problems of economic growth, which in turn has induced them to examine the importance of fresh aspects, hitherto neglected in classical theory. The work of S. Kuznets and S. Fabricant bearing on the long-term growth of the U.S. national product has shown that the "classic" factors (invested capital and labour) are only very partially responsible for the increase in gross national product. The residue which cannot be thus accounted for (over 60%) must be attributed to what has been called the "third factor" of growth. Without being able as yet to impute a definite order of magnitude to each, this "third factor" is broken down into components identified as national organization, organization of the firm, innovation and education. A new avenue of research is thereby opened for the determination of the contribution of education to economic growth.

33. Several cases where this contribution seems to have been significant have already been described: the spectacular economic progress of Japan following the development of education during the Meiji restoration, the high productivity in Danish agriculture consequent upon a very effective system of rural education and the exceptionally high industrial growth rate of the Soviet Union, where a large number of skilled engineers and technicians have become available. However striking these instances may be, they do no more than illustrate a hypothesis which cannot as yet be scientifically proven.

THE PROBLEM OF EDUCATIONAL COSTS

34. The first problem to have attracted the planners' attention is that of educational costs. Recent educational expansion programmes have led economists to measure these costs and to analyse their components: capital and current expenses, the latter made up of staff, equipment and maintenance costs. Calculations have also been made of per-pupil cost, the cost of graduates and the unit cost of expanding facilities at various educational levels. For this purpose, data has been collected concerning public and private expenditures, family outlays and the opportunity cost due to the inability of students to take up remunerative employment, etc.. Such data, however, remain as yet incomplete and intractable to cross-national comparisons.

35. The Netherlands Economic Institute has put out a study concerning investment needs in the majority of underdeveloped countries in the area of technical education and the training of highly skilled manpower, for the decade 1960-1970^{1/}.

36. Though only rough indications are given and the results are highly approximate, the methods employed seem rather interesting.

Three hypotheses underly the estimates:

- 1) An increase in annual per capita income of 2% over the decade 1960-1970;
- 2) Human investments are assumed to be linked with total investment, or given sectoral investment, or national income;
- 3) The per student cost in technical, agricultural or natural sciences is reckoned at US \$ 10,000 to 15,000.

The report submits four estimates based on

- 1) relationship with national income;
- 2) relationship with total investment;
- 3) a given rise in the number of students;
- 4) a given rise in the supply of highly skilled manpower.

37. This method is interesting because the underlying assumptions seem reasonable, if based on probing empirical enquiry. Such enquiries have as yet to be conducted so that the necessary investment decisions appropriate to a particular society can be examined in detail.

^{1/} cf. The need for pre-investment activities in the newly developing Countries.

38. In their report for the Washington Conference^{1/}, Professors Svennilsson, Edding and Elvin express the total cost of a student age-group as follows:

$$U = P_s \cdot e \cdot t \cdot W \cdot (1 + k)$$

where

- U equals total expenditure for the age-group;
- P_s equals the total population falling within this age-group;
- e equals the enrolment ratio
- t equals pupil/teacher ratio
- W equals average annual teacher salary
- (1 + k) equals relation between total per pupil cost and teacher cost

per pupil

39. If P_s is given, total expenditures varies with e, t, W and k.

e. It is obvious that e will increase considerably in all developing countries, and for all age-groups.

t. In the industrialized countries, t shows a tendency to diminish owing to shorter teacher working hours and as a result of the development of technical education, where the number of students is limited. In developing countries, the shortage of teachers is the chief bottleneck and t will be very low for some time yet.

Allowance must nevertheless be made for technical progress in pedagogy (audio-visual aids) which may raise k.

W. Salaries are very high in most of the developing countries, particularly in Africa, in relation to per capita income. It is possible that an increase in the number of teachers and the availability of audio-visual aids may lower W. But in this case, t and k will increase.

k. Costs other than staff costs absorb about 40% of total expenditure in European countries. In developing countries, these costs are high owing to the shortage of equipment, few classes etc.

40. In fact, per pupil costs represent little uniformity so long as the cost of each year of study has not been determined. It is not

^{1/} of. Targets for Education in Europe, p, 35.

sufficient to divide aggregate expenditure on primary education by the number enrolled in order to obtain a satisfactory "production cost": in underdeveloped countries there exists a very significant gap between the cost of the first year, when staff costs are minimal since only the least qualified teachers are used, and the cost of the sixth year, when the number of pupils is much lower owing to considerable drop-out, (in many African countries, fewer than one pupil in five reach the last year of primary education, and fewer than one in six obtain their primary studies certificate), the number of pupils per teacher being at this stage much lower, and the teachers themselves more highly qualified. In the same way, in protracted secondary education, costs are much lower for the first year (less qualified teachers, greater number of pupils per class, less costly equipment) than for the final years. It is therefore necessary to replace the concept of per pupil cost at different educational levels by a concept of average cost for each year of study.

41. A more rigorous calculation of costs will permit more accurate financial projections. Yet it should be noticed that, by introducing the notion of drop-out, a fresh aspect of education is broached: that of its efficiency or output.

THE PROBLEM OF EDUCATIONAL OUTPUT

42. This is an essential factor for economists. Pictured as a business, the purpose of which is to maximise knowledge, education must be examined not only from the side of costs and teachers (inputs) but also from the side of the finished products, which are the trained students (outputs). This, of course, is mainly a qualitative aspect of education, more within the competence of educators than of economists. But the aspect has not to date been adequately examined, chiefly because educators naturally tend to concentrate on the best pupils and on success at examinations rather than on the leavers and the failures.

43. While awaiting specialised research on optimum average acquisition of knowledge (or average development of aptitudes) for every year of study or every educational level, the economist can measure efficiency by the drop-out rate as between one year and the next or for an entire cycle.

Fairly precise data on this point were gathered in Africa in 1961, in Niger by Unesco mission, in Mali and the Ivory Coast by the I.E.D.S.S. But the methodology for this kind of enquiry has not yet been perfected and a yardstick for drop-out measurement remains to be defined. Nonetheless, such studies are of great interest to the educator, chiefly in connection with the introduction of new teaching methods through the use of radio, the cinema or television. They can indicate the optimum conditions for the introduction of such new methods by taking into account both cost and output.

44. It is not established that instruction by radio is less costly than the traditional variety, but if it turns out to be much more efficient, the use of radio may be considered advantageous as long as an increment in efficiency is less expensive than its equivalent achieved by traditional methods (replacement of poorly qualified teachers by well-qualified ones, cutting down on the number of pupils per class, etc..). Similar studies might than be undertaken of the "profitability" of training poorly qualified teachers by setting the cost of such training against the improvement in the quality of teaching. Such research should be based on controlled scientific pilot experiments which would allow for the evaluation of costs and output in relation to precise results, their interpretation being undertaken by interdisciplinary teams made up of educators, sociologists and economists.

45. Other studies have been made to measure the rate of return of education in terms of earnings, chiefly by Prof. T. Schultz. He compares individual outlays on education (including public and private expenditure as well as its opportunity cost) with aggregate additional earnings over the whole of professional life. The cost return ratio is found to be 11% for higher education, 12% for secondary education and 40% for primary education in the United States^{1/}. Such calculations have not been made for any of the developing countries, the lack of reliable data making this unfeasable. Furthermore, the structure of

1/ Th. Schultz: Education and Economic Growth, 60th Yearbook of the National Society for the Study of Education, Part II, Chicago, Ill. 1961.

salaries typical for these economies makes the assumption that the level of individual earnings reflects an optimum situation for economic development, highly questionable. Yet it would be of the greatest interest if criteria were defined to permit the evaluation of education in national rather than individual terms, by treating education as a factor of productivity. Studies might be undertaken to compare productivity as between several firms employing workers possessing various levels of skill and training.

THE PROJECTION OF MANPOWER NEEDS

46. All the above research suggestions are important, but results can hardly be awaited before educational plans are worked out. At present, one of the most urgent problems for study which would permit educational plans to be linked to economic planning, is that of projecting manpower needs. Several studies were recently undertaken in Africa. In Nigeria, the Commission reporting on Post-School Certificate and Higher education based its recommendations on a study of the needs for senior and intermediate personnel by Prof. Harbison. In Tunisia, a Unesco mission attempted to forecast skilled manpower needs in industry in order to recommend suitable measures affecting technical education. Such work is of fundamental importance if the educational system is to be geared to economic development trends. Yet the problems encountered are as yet far from having been satisfactorily solved and call for further investigation.

47. Several difficulties are encountered:

- a) As in all interdisciplinary work, economists and educators adopt different assumptions. To shape an educational system, long-term measures must be taken, covering at least ten, and preferably fifteen or twenty years. Educational reforms yield results only after a protracted period during which teachers are trained, buildings constructed, pupils taught. Planning techniques do not allow for such long-term projections: most African countries have development plans covering 2, 3 or 5 years. Even in the industrialised countries, long-term projections in the economic sphere are still very much in the preliminary research stage. Further, educational plans must

often be worked out in the absence of any economic planning whatsoever. Economists who collaborate in the working out of manpower projections therefore mostly have to base their estimates on "reasoned hypotheses" rather than on detailed plans.

- b) Except in socialist countries, economic plans do not generally include definite employment programmes. Until recently, it was considered that the market mechanism could be left freely to adjust the supply of to the demand for labour. Statistics concerning the occupational structure of practically all countries are naturally available, but turn out to be of limited usefulness when it comes to determining levels of training and qualification. Classification into skilled, semi-skilled and unskilled jobs is very hazy; in the figures for the underdeveloped countries, workers in the modern and the traditional sectors are lumped together under a single category. A recent ILO study^{1/} shows that an optimum use of human resources is not amongst the targets to be found in the economic plans of under-developed countries. This explains why economists still lack criteria by which to choose between capital-intensive and labour-intensive techniques.

48. Work recently undertaken in Puerto Rico, Italy (by SVIMEZ) and France (by the Commissariat du Plan) to determine manpower needs in 1975 is still in the experimental stage. Assumptions made about changes in productivity were based on analogies with countries already at a higher level of development, but the next fifteen years will no doubt witness the coming of as yet unforeseeable innovations and changes, just as the particular natural, institutional and political situation in each country will have repercussions on its economic development. Such difficulties are inherent in all long-term projections where coefficients, which may be assumed to be constant in the short run, vary significantly (and in a non-linear manner). The result is a complex of equations not amenable to operational manipulation.

1/ Les objectifs d'emploi dans le développement économique, Genève, 1961.

49. Also, those skill-levels appropriate to a classification of the labour force according to levels of training have not yet been sufficiently closely defined. The international classification of employments set up by ILO (the ISCO system) is intended to identify occupations but does nothing to facilitate groupings by training levels. It would be necessary to base the analysis of the active population on common criteria defining both occupational qualifications and the nature of workers' training to allow for manpower projections to be translated into targets for educational planning. The first pieces of work in this field actually tackled this difficulty. For Nigeria, Prof. Harbison distinguished between senior personnel (of whom two-thirds have received, or are to receive university education) and intermediate personnel (whose level of training would correspond to secondary education.) In a later document submitted to OEEC, he submits a four-fold classification system based on four levels of training.

50. The fifteen-year projections of SVIM3Z and the French Planning Office had to be based on manpower statistics which were difficult to interpret since there is considerable uncertainty about the training levels of those described as unskilled, semi-skilled or skilled workers, and those described as office workers. A glance at the desirable spread of skills in the Indian labour force by 1975 poses the question of the ability of the country's educational system to meet these needs: 27% unskilled workers (8 years of schooling); 40% skilled workers (10 years of schooling); 21% intermediate personnel and 12% senior personnel.

51. In France, two methods were used to forecast 1970 manpower needs: the first extrapolates past trends to classify the future occupational structure (according to demographic projections) into seven skill categories, submitting these figures to the commissions representing the principal sectors of the economy for perusal, while the second consists of setting up hypotheses concerning expected changes in productivity linked to estimates concerning sectoral physical output,

along the lines also adopted by SVIMBZ. The results obtained by these two methods are, however, still incomplete and hardly seem compatible: they are much more conservative in the first case than in the second.

52. In order to base manpower projections more solidly, it would be useful if comparable data were available concerning the occupational structure of the working populations according to productive sectors and level of training in a number of countries. It would then be possible to compare the occupational pyramids of countries at different stages of development, which would indicate what training targets could relevantly be aimed at, assuming for example that the productivity of a certain sector in country A would, within a given period (t_n), attain the level achieved in country B in t_0 .

53. What is still lacking is an agreed international classification system with an appropriate unit of measurement. It would appear that this could be set up by following the method currently adopted by Unesco to create international standards concerning technical education, which define levels of training by the number of years of study required to attain them. In keeping with this, the following categories are distinguished for an industrialized European country: unskilled labour (compulsory education period); skilled labour, identified as 6.3 (three years of technical education following upon primary education); technicians, 6.6 (six years of technical education, equivalent to protracted secondary education); engineers 6.6.4 (four years of higher technical education following upon secondary education).

54. This method could be extended to the working population at large by determining what is the average level of training corresponding to an average set of qualifications in a given country. Tables can then be drawn up by sector (such sectors should coincide with those used in the national accounts so as to facilitate long-term projections); the tables would show, on the one hand, the number of years of study for each level of qualification and, on the other, the number of workers at each of these levels.

55. For instance, for the manufacturing industries sector with 10,000 workers:

Qualification and training levels	Number of workers
1. Engineers 6.6.4	200
1a. other senior personnel 6.6.4	100
2. technicians and intermediate personnel 6.6	350
3. skilled foremen 6.4	350
4. skilled workers 6.3	3,300
4a. office staff 6.3	1,000
5. semi-skilled and unskilled workers 6.2	<u>4,700</u>
Total	10,000

56. If a year of training is taken as the basic unit, such tables can be drawn up for all sectors, the grand total representing the whole of the working population, broken down by the number of those having received university-level education, protracted or short secondary education, etc.. This is similar to Prof. Schultz's approach for assessing the "stock of education" of the population of the USA, divided up by sectors.

57. Projected manpower calculations can be presented in the form of similar tables. If it is assumed, for example, that a net increase of 100% in the output of the manufacturing industries sector will take place in 15 years with constant productivity, then the manpower needs at the end of this period will be exactly twice those shown in the table above. But higher productivity can also be taken into account, involving an adjustment to the occupational pyramid by a procedure analogous to the distribution of training levels for a country B at a level of development comparable to that to which country A aspires.

58. This would make it possible to assess the stock of education at the beginning and at the end of a period, which, in turn, would permit the plotting of a strategy of education appropriate to development from a given level to a higher target level. In dynamic terms this would involve a calculation of the number of graduates put out at each level of the educational system so as to ensure the desired

structural modification of the labour force.

59. In the underdeveloped countries, such studies must not be limited to the modern industrial, agricultural or commercial sectors since the mobilization of the traditional sectors is in fact one of the essential targets of development plans. It is necessary in such a context to calculate needs for qualified personnel to staff the various development projects included in the plan, such as for example, the number of village animators, of agricultural extension officers, etc.. It is also possible to calculate the skill-distribution necessary where labour-intensive techniques are used, the success of which is determined in large measure by the training pyramid: the proportion of one foreman to one hundred unskilled workers may permit no more than navvying work to be undertaken but a proportion of five skilled and twenty semi-skilled workers to one hundred workers may allow for considerably more complex and productive jobs to be undertaken. In a country where the shortage of capital severely limits the number of employment outlets in the modern sector, education may thus play the role of an employment multiplier since the training of five skilled and ten semi-skilled workers would permit the employment of about one hundred unskilled workers to productive purpose.

60. It can thus be seen that the problem of long-term manpower projection affects not only educational planners but also economists and labour specialists. Furthermore, all types of training which are presently studied discretely, must be encompassed, which means that distinctions between professional training, technical education, agricultural education, training within business and in-service training must be overcome. Such an overall study of the planning of human resources presents an opportunity for closer collaboration between the United Nations, Unesco, and its other Specialised Agencies, experts and researchers.

61. It also calls for careful co-ordination so that the most efficient use of technical and financial means can be made. It is for this purpose that, in March 1962 and in accordance with the wish expressed

at the Conference of African States on the Development of Education in Africa, Unesco is organising a meeting of the Ministers of Education of African States to put the Addis Ababa plan into operation. This meeting will allow the ministers to study ways of integrating national and external efforts and to define the manner in which consultations of the same nature can regularly take place in the future.

62. It has been the purpose of this paper to examine the problems of educational planning as these relate to economic planning. However, such planning must take into account other factors, notably the social factors and it is on this note that it is appropriate to conclude. Problems of cost, output and professional training cannot be treated in the abstract. Education is for people who belong to an ethnic group or a society or a State and who speak a particular language. It must therefore be adapted to the milieu in which it is dispensed so that the trained population is not estranged from its own society but can, on the country, contribute effectively to its economic development. Planning must always take into account the inter-dependence of social phenomena and social variables. For example, academic failures can be considered as so many symptoms of maladjustment: the maladjustment of education, of teachers and of pupils. Absenteeism and drop-out on account of failure, abandonment or repetition must be seen in their relationship to the family, rural emigration, the tempo of agricultural work and customs of all sorts. On the other hand, a rise in the rates of pay, either on the national scale or within the individual firm, does not necessarily imply a rise in costs if its effect is to settle the labour force and thus avert delays and overheads occasioned by its instability.

63. At a higher level, there remains, of course, the choice between mass education and elite education which is primarily a political problem, yet calls for a nice sense of balance. No development is possible without an elite, provided that such an elite does not constitute a foreign body within society; mass education, on the contrary, establishes communication, makes possible meaningful

exchanges between the leaders and the governed, promotes the spread of information and innovation, all of which are essential components of progress. Educational planning cannot really succeed unless it is undertaken as part of a total perspective embracing both the economic and the social aspect of development.

A summary of work done in the field of educational planning in Africa during the recent years presented in an annex to this paper gives the essential elements of the plans for education which have been worked out or in the process of elaboration. These plans are analysed according to the same method: objective aimed at, methods of elaboration, analysis of the education system, proposals, means of realization, both human, and financial.

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