DOCUMENT RESUME

ED 104 600 RC 008 442

TITLE	Education in a Rural Environment. Education and Rural Development -- 2.
REPORT NO	ISBN-92-3-101142-1
PUB DATE	74
NOTE	63p.
AVAILABLE FROM	UNIPUB, P.O. Box 433, New York, New York 10016 (ISBN-92-3-101142-1; $3.30)
EDRS PRICE	MF-$0.76 HC Not Available from EDRS..PLUS POSTAGE
DESCRIPTORS	Adult Education; Agricultural Education; Community Involvement; *Coordination; *Developing Nations; Early Childhood; *Educational Objectives; Educational Planning; Global Approach; Higher Education; Integrated Curriculum; *Policy Formation; Rural Areas; *Rural Development; Scientific Concepts; Teacher Education

ABSTRACT

Assuming that education and rural development must be correlated, this booklet defines the general thrust for rural education programs in developing countries. The 1st of 4 sections briefly describes the various aspects of rural development (emphasis on integration of agriculture, industry, transport, trade, credit, health, education, culture, sport, and leisure activities). Urging a thorough review of the educational system, the 2nd section deals with the pedagogical principles of renewal, advocating a national education, simultaneous adult/child education, education linked to life, equality of opportunity, and general education which is forward looking, action oriented, and rooted in the community environment. The 3rd section deals with pedagogy and development, specifying the school role and advocating a school for each community which would serve as a "nursery" for development and link between generations and promote an independent approach to familiar environment. Early childhood, adolescent, adult, teacher, and higher education are individually covered (emphasis on global vision, an integrated program, and the practical and concrete aspects of agriculturally and scientifically related subjects). The final section deals with planning (experimentation, finance, and international cooperation). (JC)

Education in a rural environment

Education and rural development—2

Unesco

Education in a rural environment

Unesco Paris 1974

Published by the United Nations
Educational, Scientific and Cultural Organization
7 Place de Fontenoy, 75700 Paris
Printed by J. Duculot, 5800 Gembloux (Belgium)

ISBN 92-3-101142-1
French edition: 92-3-201142-5
Spanish edition: 92-3-301142-9

Printed in Belgium

Preface

The title of this work defines its subject: a type of education which, within the framework of a national system, takes the 'rural environment' fully into account in its content, form, structures and methods, and not 'rural education' as inherently different from the education given to town-dwellers. This is the concept underlying the experimental pilot projects on education 'integrated in rural development' carried out by Unesco in one African country (Uganda) and one Latin American country (Peru) from 1970 to 1973. The authors have also drawn on the Organization's experiments in regard to science education, agricultural education, functional literacy, teacher training, etc., and the work of the meeting of experts held at the Unesco Institute for Education, Hamburg, in September 1968 on the theme 'Community schools in developing countries'. Finally, approximately sixty Unesco experts working in the field (in Africa, Latin America, Asia and the Arab States) gave their opinion before the study was put in final form. A first version of the work, prepared by Pierre Rakotomalala of the Unesco Secretariat, was revised and supplemented by Lê Thành Khôi, the author of *L'Industrie de l'Éducation*,[1] among other works, and consultant to the International Commission on the Development of Education, whose report was published under the title *Learning to Be*.[2] *Education in a Rural Environment* deals mainly with the developing countries, who have a vital interest in rural development and are also acutely aware of the need for educational renewal as a means of contributing to it.

The work is intended for specialists but could also be read by politicians, development agents and the general public, inasmuch as its basic premise is that education, even when it is described as 'rural' education, is the concern of the national community as a whole and of each of its members. This basic premise should, we hope, be accepted by all, even if the views expressed in our work are not always necessarily those of Unesco.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Unesco Secretariat concerning the legal status of any country or territory, or of its authorities, or concerning the delimitation of its frontiers.

1. Paris Éditions de Minuit, 1969.
2. Paris, Unesco, 1962; London, Harrap, 1962.

Contents

Introduction

The educational crisis disturbing society particularly affects newly independent States who have an educational system modelled on that of the industrialized countries. With the dual aim of improving the lot of their predominantly rural population and raising the productivity of their also predominantly rural economy, most of these States fix development—and more particularly rural development—objectives for the educational-reform programmes. While the idea of linking education to development has now become commonplace, its application has proved to be more difficult. In particular, how should education be designed to bring about rural progress? Development is at the same time a single and a many-sided undertaking; action taken in a rural environment cannot be separated from action taken in an urban environment, for the two are closely connected and influenced by each other through the movement of persons, property, services and funds.

It is only too easy to draw a dangerous dividing line between town and country, accentuating the flagrant differences that in fact exist, unless one resists the temptation to meet the needs of the situation by establishing a specifically rural education system, in other words a dual system with all the undesirable social consequences that it involves.

But, while there should only be a single national system of education, the specific characteristics and needs of the rural environment should not be neglected. However obvious the idea may seem, it is necessary for education as it is for development to take national conditions fully into account. That is one of the keys to renewal.

If national conditions are to be taken into account, they must first be subjected to a critical analysis. Cultural factors include both positive and negative elements which must not be neglected if the aim is to promote science and technology in the minds of men as well as on the factual plane. Social objectives may conflict with economic objectives or, on the contrary, harmonize with them. Political, social, financial and technical restraints affect both the allocation of resources and the distribution of income.

This brief reminder shows the extent to which educational policy is complex. Each country has its own problems and specific solutions accordingly have to be found for them. The main purpose of this study is not to outline national or even regional strategies on the basis of a given typology but, more modestly, starting with a global conspectus of the problems of rural development and education, to draw lessons from what is being done in an attempt to solve these problems and to define the main lines in which educational programmes must be directed.

In the conditions prevailing in most of the developing countries, this approach brings out the fundamental need for deriving the maximum benefit from, on the

one hand, human resources—on the principle that man (the individual and the community to which he belongs) is at once the agent of development and the end to which it is directed—and, on the other hand, the available data and environmental resources (natural and technical, socio-economic and cultural), with education viewed as an integral part of development.

Since this study is of a general nature, it will not deal with certain specialized areas of specific problems.

Rural development

Development is not only characterized by the growth of production and income; it is also closely linked with and necessitates the evolution and transformation of economic and social structures. The combination of these factors results from the will for change, which itself is associated with the resolve of the governments in power and the mobilization of national efforts. Many obstacles, of course, have to be overcome: tribal differences, feudal opposition or external interests which do not accord with the aims of national development. It is abundantly clear that the population can only be mobilized to work for development if the latter is designed to benefit the population as a whole and not small local or foreign minorities. Once these conditions have been recognized, the next step is to provide education, since a more or less illiterate population cannot assume its responsibilities to the full.

We are speaking here of education as such and not of school attendance. The considerable and praiseworthy increase in enrolments in the developing countries has unfortunately had little effect on their economic growth; it has even held back development on occasions on account of its bookish nature, its high cost and a semi-mechanical imitation of external models which do not fit in with national needs.

Before considering the problem of educational reform, it is appropriate to study—briefly, for it is not our principal concern—the various aspects of rural development in order to discern clearly what contribution education can make to this process, and what limitations there are on its role in this regard.

The factors involved in rural development

Some 60 per cent of the world's population live in a rural environment, but in the developing countries the percentage rises to 70–80 per cent, except in a few Latin American countries. This sector of the population is mainly engaged in agriculture, but the latter only accounts for a very small proportion of the domestic product—from 20 per cent in Latin America and the Middle East to 40 per cent in Africa and Asia.

A comparison between these two sets of figures immediately shows the low productivity of agriculture. What are the reasons for this?

One obvious cause is the backwardness of the techniques used, which is explained by the poverty of the agricultural worker who uses only rudimentary tools and little or no fertilizer. But such poverty is not usually due, as is often believed, to demographic growth. In Africa and Latin America and even in Asia (apart from some areas) an increase in the density of rural population has always

been accompanied by an increase in productivity,[1] the population acting as a motive force and not as a brake, particularly in districts in which there was no shortage of land.

It has also been suggested that 'traditional attitudes' may be responsible for the situation. It is true that traditional rural society has an approach to life which does not tend to maximize production or income. In a world closed in upon itself, subjected to the rhythm of the seasons and the crops, no difference is drawn between one form of work and another. In this world all forms of occupations are social obligations necessary for the preservation and cohesion of the group. Concentrated on maintaining its own balance, the system rests on the authority of the elders and the solidarity of all members of the community.

In its existing form, this society has certain ambivalent features. The authority of the elders may inhibit the younger members of the group from taking new initiatives or, on the contrary, may encourage them to do so if the elders are themselves ready to accept progress. The wider family unit may serve to support progress of the co-operative type, but may also sanction the parasitical behaviour of lethargic individuals to the detriment of the more enterprising. Finally, it seems clear that a modern economy is compatible with a wider variety of social structures than is often believed.

Be this as it may, the rational character of the rural world's attitude to work should not be underestimated.

However, important factors, other than technical and sociological, tend to depress productivity: agrarian structures, prices that provide little incentive, and the uncertainties of the market.

The distribution of land is very uneven. High yields can no doubt be obtained by intensive cultivation of small holdings, but a holding must have a certain minimum area in order for cultivation to be profitable, and this is far from being always the case. In Indonesia, 71 per cent of farm properties are less than 1 acre (0.4 hectares) in size. In 1965, in Chile, 5 per cent of the total number of properties comprised 87 per cent of the arable land. Experience has shown that it is not easy to carry out agrarian reforms—no easier indeed than to carry out educational reforms—but it would be a mistake to minimize the importance of doing so all the same. Large areas of latifundia are left lying waste. Where this system of ownership prevails, the farmer and the tenant farmer have even less incentive to make an effort since they do not benefit from the security of owning the land and the greater part of production goes to the owner. The existence of latifundia and minifundia side by side is a major cause of low production in so far as those who have the means to introduce technical improvements have little interest in doing so, and vice versa.

In addition to the dues imposed by a minority of owners, the small farmer also has to pay middlemen and moneylenders (the latter mainly in Asia). This problem, although not as complex as that of agrarian reform, is no less thorny. Experience has shown that it cannot be solved simply by establishing some sort of public credit service.

The fact is that the share of profits finally left to the small farmer only represents a small fraction of the proceeds of the harvest: in the circumstances, how can he be expected to redouble his efforts?

1. Ester Boserup, *The Conditions of Agricultural Growth*, London, Allen & Unwin, 1965.

Another, and not the least important, cause of low agricultural productivity lies in the low level of prices and in their unfavourable relationship with those of industry at the local as well as at the international level. The deterioration in the terms of trade at the expense of the developing countries which are exporters of primary products is well known. According to a United Nations study, on the eve of the Second World War a given quantity of primary products could only procure 60 per cent of the quantity of manufactured goods it had been able to procure during the last quarter of the nineteenth century. Between 1954 and 1966 the deterioration amounted to 16 per cent and affected agricultural products more than mining products (especially oil). Now this deterioration stems from the agricultural nature of the products, which limits the demand for them, from the competition of substitute synthetic materials (fibres, rubber, etc.) and even from the agricultural production of the industrialized countries (sugar, oils, cotton, cereals), which allows them to fix prices on the world market.

From this brief study, it appears that the factors involved in rural development are not mainly of a technical nature but depend on political, social and economic structures to which the agricultural worker's destiny is closely tied. It is useless to attempt to teach him to increase his output if the fruit of the greater part of his toil goes to the landowner, the middleman or the moneylender, and if the lowering of export prices is such as to reduce him to poverty. The 'green revolution' to which great hopes are attached has so far resulted in an increase in production but at the same time in a sharpening of social differences, for the small farmers do not have the means to use fertilizers and irrigation adequately. By the same token, it is worth recalling some of the illusions of a policy of growth based on exports, which comes up against the obstacles mentioned above: the limited increase in international demand for primary products and the fluctuations and relative decrease in the price of these products. The experience of the countries which have followed this policy shows that a period of rapid growth soon comes to a standstill reflected in deficits in the public accounts and the balance of payments (mainly as a result of ebbing profits, debt-servicing costs and a worsening balance of trade).

This is indeed abundantly clear from the constant widening of the gap between the developed and the developing countries (the difference between their respective *per capita* incomes increased from U.S.$1,268 in 1960 to U.S.$1,818 in 1968), and the increase in the developing countries' external debts (which rose from U.S.$22,000 million in 1962 to over U.S.$60,000 million in 1970).

True development must therefore be based on satisfaction of the material and cultural needs of the population and not on the shifting ground of exports.

Rural development and industrialization

Rural development is a prerequisite of over-all development for it affects the greater part (60–80 per cent) of the world's population.

Agriculture must be at the basis of growth, for the land provides food for the whole population (failing which the cost of importing food products would weigh heavily on the trade balance and on the process of industrialization itself) as well as the labour and raw materials required by industry. In addition, the raising of agricultural workers' incomes widens the internal market and consequently opens up new outlets for industry. In this way the agricultural stagnation

in the Third World between 1960 and 1967 slowed down the development of both heavy and light industry.[1]

Conversely industrial development is indispensable to rural development, for industry provides agricultural workers with the tools, fertilizers, machines and power they need to increase productivity, as well as with consumer goods (bicycles, transistor radios, etc.) necessary to improve their living conditions. If agricultural stagnation slows down industrial growth, the reverse is also true: industrial stagnation slows down agricultural progress.

Industrial development and rural development thus complement each other. The role of agriculture is of particular importance in the initial stage of growth, for industry, as it develops, comes to find its main outlet in the industrial sector, particularly since its productivity is always superior to that of even a diversified form of agriculture. In the long term, it is industry which supplies a solution to the problem of underemployment and unemployment (so long as appropriate production techniques are chosen and those of the industrialized countries not automatically imitated) and at the same time lays the basis for national economic and political independence.

Structures and mechanisms of rural development

Rural development must be integrated: that is to say that in planning it recognition must be given to the interdependence of all development sectors, not only of agriculture and industry but also of transport, trade, credit, health, education, culture, sport and leisure activities. The young agricultural worker will only agree to stay on the land if his income increases, if he has access to what the town has to offer, to entertainment, health and educational services—in short, if he has the opportunity to lead a good life in an environment which it should be possible to improve gradually through investments in the various complementary sectors, in such a way as to render it capable of meeting the legitimate aspirations of the young rural population.

Thus all rural development projects must be considered in an integrated manner, with all aspects taken into account. This does not mean that all the activities involved should be carried out simultaneously, but that a series of operations should be foreseen, the timing of each operation (public works, training, credit, marketing, etc.) being designed to enable it to enhance the value of preceding operations and in such a way that its value is in turn enhanced by them. The integration of activities may render a project more costly, but it certainly increases its usefulness.

In their turn, rural development projects should form an integral part of general planning on a national scale, or better still, if possible, on the scale of a regional union such as would give small countries a wider market and save them heavy investments which would only duplicate others. However, in spite of their economic advantages, such unions come up against many difficulties at present, arising from the differences in socio-political systems, language, monetary zones, etc.

1. P. Bairoch, *Evolution 1960–1967 et Perspectives à Court Terme de l'Économie du Tiers Monde*, Klagenfurt, Symposium of the Vienna Institute for Development and Co-operation, June 1968.

At the national level, the role of planning is to express the collective will, to provide a rational basis for governmental decisions and economic activities, and to co-ordinate, stimulate, direct and harmonize the action of the various development bodies, including international organizations.

While the means employed to bring about rural progress must be adapted to the conditions peculiar to each country, it appears that in all cases decentralized structures would be particularly favourable not only for the implementation of projects but also for drawing them up. Entrusted with economic and social responsibilities, possessing their own financial resources whether of central or local origin, the decentralized bodies involved should be directed for the greater part by elected regional representatives. Their existence would lead the various administrative services and development agents (agriculturalists, teachers, community leaders, hospital staff, etc.) to work together, thus helping to dissolve institutional barriers in a comprehensive view of society.

The existence of appropriate structures, however, is not enough. The conditions conducive to their proper functioning must also obtain. The first of these is that progress should be for the greater good of the greatest number and not of a minority. The failure of many community development projects may be explained by their failure to meet this condition.

It is also necessary to ensure an increase in agricultural workers' income. Their purchasing power depends as much on the price they obtain from the sale of their products as on the price they pay for their town purchases. The competent authorities should therefore take steps to lighten their tax burden, reduce or eliminate (through the establishment of co-operatives) the percentage taken by middlemen and wipe out the inequalities between the incomes of agricultural and urban workers, the incomes of the latter sometimes being twenty or even thirty times higher than those of the former.

Education: pedagogical principles of renewal

If man is the source, the agent and the ultimate aim of development, it is incumbent upon education to fit him for his role.

On the other hand, the chief result of the considerable efforts made by the developing countries on behalf of education during the past twenty years has been an increase in the number of persons undergoing schooling; the impasse to which these efforts have led is characterized by a persistent disparity and lack of balance between the sexes, between regions, between urban and rural areas and between social classes.

Piecemeal reforms are no longer enough: it has become a matter of urgency to carry out a thorough review of the educational system, and to ensure that education makes a real contribution to rural development.

The impasse of school attendance

Between 1950 and 1965, 200 million adults in the developing countries learned to read and write, and the school population increased by a factor of 2.5.

Enrolment in primary schools rose from 66 to 153 million, in secondary schools from 8 to 30 million, and in higher education from less than 1 million to 3.8 million.[1]

But these rates of growth, which are much greater than in the industrialized countries, have not yet led to a high level of schooling. Whilst primary-school attendance approaches 100 per cent in Europe and North America, the figure is only 40 per cent in Africa, 55 per cent in Asia and 75 per cent in Latin America. In secondary-level education the figures are respectively 15, 30 and 35 per cent, compared with 65 per cent in Europe and 92 per cent in North America. This is despite the fact that financial aid to education rose from 2.7 to 3.9 per cent of the gross national product between 1960 and 1968.

Increased investment has not been matched by increased output in this field.

Within the system, efficiency is seriously impaired by the number of pupils who lag behind, who drop out or who have to repeat the same course. The loss due to wastage may be determined by comparing the number of years which a pupil actually takes to complete a given course of studies with the theoretical duration of the course. In primary education, according to a recent survey by Unesco conceming fifty-eight countries, this ratio varies between 1.24 and 3.55 in Africa, 1.53 and 2.42 in Latin America and 1 and 2.48 in Asia, compared with a ratio between 1 and 1.56 in Europe.

1. Excluding the People's Republic of China, the Democratic People's Republic of Korea and the Democratic Republic of Viet-Nam.

In other words, there are certain regions in Africa where a child may theoretically spend more than twenty-one years in studies which should last six years!

In many African, Latin American and Asian countries, more than half the pupils of primary schools, particularly in rural areas, drop out entirely after the second year.

Secondary education is often regarded as an automatic passport to higher education, and primary education as a stepping-stone to secondary education. Curricula are thus drawn up accordingly, despite the fact that only 20 per cent of the pupils in primary schools actually move on to the secondary level.

In most cases, particularly in rural areas, school drop-out is due not only to causes inherent in the educational system, where accent is laid on selection rather than on apprenticeship, but also to the distances pupils have to travel, which are often exhausting for the younger children, to their undernourishment and to the need for them to work at home with their families. We should also stress the lack of schools covering the entire period of schooling: children abandon their studies because they are unable to continue them.

Moreover, the majority of children who have received partial schooling are incapable of overcoming the inertia of an illiterate environment and themselves lapse into illiteracy after a few years. Only a minority of the adult population are educated, and here again we must point to the disparity in the numbers of literate men and women. Educational investment is directed as a matter of priority towards children; adults are all too frequently neglected and women almost completely ignored.

Outward manifestations, the most striking of which is the increasing amount of unemployment among graduates, also reveal the deficiencies of the system.

In the early days of independence, education provided for individual advancement, particularly in public service, which in every country enjoyed a certain prestige. Now, however, the public service is overcrowded, whilst economic growth resulted in only a limited number of employment openings, the more so in that it was modelled on the industrialization of the advanced countries and applied technologies of a capital-intensive rather than a labour-intensive type.

The educational system is also to a certain extent responsible in so far as it is also based on the systems of developed countries, without any reference to local conditions; it dispenses book-learning and, far from preparing young people for the real working world, accelerates the drift from the countryside towards the towns, where they often find nothing but unemployment, slums and delinquency.

Principles of renewal

If education is to stimulate rather than obstruct development, it must be firmly rooted in the environment, develop the creative capacities of individuals and accord equal opportunities to all. Obviously, education alone cannot alter the environment. As we have pointed out above, its action must be co-ordinated with that of the other services contributing to development.

A national education

Each country has its own particularities, resources, problems and requirements, to which educational aims, curricula and methods must be adapted, so that men

and women may be enabled to play their full role in the life and development of the nation. If it is true that, under present economic and political circumstances, the life of a nation cannot be sealed off in isolation, then it follows that educational action which does not reflect specific situations and local realities may come to nothing.

In the developing countries, and more particularly in the least favoured rural areas, education must develop a civic spirit and strengthen the feeling of nationality, at the same time taking care to avoid encouraging excessive nationalism or chauvinism. In both its content and its methodology, education must from the outset take into account the at once difficult and indispensable task laid on it by this necessity to integrate the individual with his environment.

The first step towards such integration is through the intermediary of language. Speaking generally, the mother tongue is the best medium of instruction, ensuring as it does maximum rapidity of learning.

Numerous educationists have noted the extent to which teaching in a foreign language, during the first years of schooling, accentuates still further the academic and bookish character of the education provided, particularly in Africa. The result, even in such 'practical' subjects as agriculture and domestic science, is a memorization of knowledge, without real comprehension. The situation is further aggravated by the lack of teaching materials, so that as a general rule instruction is provided directly by the teacher. The result is that at the end of several years of studies the pupils have mastered neither their own mother tongue nor the foreign language of instruction.

Because it conveys the thoughts and traditions of the group, language is also an instrument of development. Progress implies the dissemination and application of science and technology; and how can these be carried with a rural population if a foreign language is used? Instructors and workers must be able to communicate with each other; the latter must understand the explanations given by the former; they must be able as far as possible to read the simple literature given to them and, in their turn, to communicate their own experience. Education provided exclusively in a foreign language isolates the educated minority from the general public and contributes to the creation of 'two nations in one'.

There is, of course, no question of eliminating foreign languages altogether. The teaching of one, or even two foreign languages permits rapid access to world culture and more particularly to the most recent results of scientific and technical research. But those who recommend the use of a foreign language from the primary school onwards forget that less than 50 per cent of the children concerned reach the end of the elementary course. The remainder lapse into illiteracy; what little they have learned of French or English is of scant use to them. It might therefore be well to limit the teaching of these languages to an initiation, provided in the final classes of the primary course for the purpose of familiarizing secondary-level pupils with their use.

In reality, the problem only arises in countries which do not yet possess written languages (for, even where several languages are spoken, one of them is often dominant and can be learned more rapidly than any language which is completely foreign). Here, the aim should be to create a written language as rapidly as possible, and to train teachers, prepare textbooks, etc., regarding the use of a foreign language as merely a temporary stop-gap measure.

Simultaneous education of children and adults

This imperative, from the point of view both of pedagogics and of development, requires no emphasis.

The education of children and of adults can and should be complementary. An educated family environment determines more than any other factor the progress of the child. The latter learns better, and learns more, if his parents are also learning; for the conflict which may erupt at any moment between what the child is taught and the traditional attitudes of his parents can do him nothing but harm. It is, moreover, pointless to transmit new knowledge to the child if this knowledge is not put to practical use, particularly where such subjects as nutrition, hygiene and so on are concerned. In their turn, the parents must therefore understand why it is necessary to dig wells, to destroy or bury rubbish, to avoid using the same washing water for all members of the family, to adopt a balanced diet, etc.

In this connexion, the importance of women's education should be stressed. The woman is not merely the teacher of her children; she also takes an important part in agricultural work. And yet 70 per cent of the world's illiterates are women, and this proportion is even higher in rural areas because of a whole series of traditions and prejudices. Sharing with men the responsibility for development, women should be educated in the same manner, and not merely in the fields of domestic science, hygiene and child care, which, far from promising advancement, tend to confirm the inferiority of their status.

Briefly, then, the school should not be destined solely for children, but should constitute a source of culture for the community as a whole.

An education linked to life

In its present form, education communicates a bookish knowledge, very often unrelated to surrounding realities, so that the children lose interest and learn by rote, mechanically: what little they learn alienates them from their environment rather than attaching them to it.

If the school is to become a source of culture and development, it must develop capacities of thought, action and creativity, relying for this purpose not only on the teacher—whose training will have to be remodelled accordingly—but on all development agents (agricultural extension workers, health workers, industrial technicians, craftsmen), as well as having recourse also to all local 'specialists' (crop and livestock farmers, fishermen, carpet weavers, etc.). Obviously, it will also make use of books and other forms of documentation, the press, radio and (where available) television.

An education linked to life might be based on the following general principles:

It should be rooted in local problems and oriented towards the solution of these problems. Like the adult, the child is first and foremost interested in his own environment and its development. The re-activated 'centres of interest' methodology makes it possible to co-ordinate the themes and techniques of the different types of learning. But study leads to knowledge, and thought should lead to action. With the assistance of the teacher, the extension worker and their colleagues from other services concerned with development, children and adults alike will endeavour to apply solutions which they have arrived at jointly to the problems confronting individuals and the local community as a whole.

It should exercise the 'learner' by means of practical activities. To do is to learn, and vice versa. Action favours the development of thought. By associating theory with practice, the learner assimilates scientific principles as they emerge from his own experience, and simultaneously translates his knowledge into action. This process presupposes a combination of and complementarity between teaching and productive work (however elementary the technology involved may be) and socio-economic and ecological data about the environment. 'Visits' to farms or factories, or traditional 'studies' of the environment are not enough.

It should instil scientific method. The question is not so much one of acquiring scientific knowledge as of assimilating a scientific approach and method. Seen in this light, a scientific education teaches the pupil to observe and reason scientifically, i.e. rigorously, objectively and coherently, avoiding both a metaphysical interpretation of the facts and a mythification of science and technology. It applies the methods of science to the solution of all problems, and implies the development of a critical and logical attitude to life in all its aspects. A scientific attitude becomes a habit and the ultimate result is that science becomes one with culture.

Equality of opportunity

The lack of schools, the great distances which pupils must travel, the absence of complete primary courses, overcrowding in the classroom and shortcomings in the training of teachers all tend to place the countryside at a real disadvantage in comparison with the city. In urban areas, school attendance is often three times greater than in rural areas.

Moreover, the education provided in rural areas often fails to take account of rural needs. To be 'open' to economic and social realities, such education must make the understanding of those realities an integral part of the culture which it dispenses. But the result may well be spurious 'reform', which, under the guise of adapting education to the rural environment, actually confirms the isolation of its inhabitants. Such a concept of ruralization is dangerous, and is likely to meet bitter opposition on the part of country-dwellers, who may rightly see it as a source of discrimination.

The disappointment and, in some cases, the failure encountered with regard to a number of experimental schools for rural development are due, in particular, to the fact that those schools have had no contact with or influence on others. They have remained outside the system, offering young people no real chances of advancement, and merely aggravating the existing inequalities, whether cultural, technical, administrative or political vis-à-vis the cities. Improved communications and the progressive penetration of radio broadcasting have made the rural population aware of those inequalities, increasing their dissatisfaction and accelerating their departure for the cities.

With all due regard to the principle that schools should be adapted to their environment, the education provided in rural areas should be equivalent to, if not identical with, that provided throughout the rest of the country. It must thus conform to universally valid standards, provide equal opportunities for pursuing the different types of studies and enable the best elements to realize their potential.

This implies a reassessment of all the means employed (allocations for equipment, recruiting, training and re-training of teachers, pedagogical renewal,

the use of mass-communication media, etc.) in the light of the requirements for mass education. Here, attention should above all be directed towards obtaining optimum results from primary education, which, in practice, is the entire education received by some 85 per cent of all those who attend school. Mass education should be seen as the first stage of lifelong education, in which a taste and a capacity for self-instruction would play a major role.

Lifelong education should be based on the following principles:

It should be disseminated through all available media and not merely through the school: through part-time and correspondence courses, radio, television, public libraries, etc. And there should be co-ordination and co-operation between the different institutions involved.

The system should be open, so as to facilitate the mobility of would-be learners, who should be able to leave and re-enter the system without difficulty, and to combine education and employment. Diplomas should no longer be guarantees of employment, but evidence of a certain level of knowledge and skills. Access to employment or the pursuit of higher studies after a period of interruption should be subject to tests, interviews, etc., designed to check the knowledge, skills and motivations of the candidate against the type of employment or study involved. Horizontal and vertical discrimination and barriers between different types of educational institutions should be abolished. Legislation should provide for holidays with pay to enable workers to perfect existing skills or learn new ones.

General education and training

The rapid development of scientific and technical knowledge, in rural areas as elsewhere, and the increasing need to promote the transformation and industrialization of those areas, mean that the individual is in greater and greater need of a general education which, added to his training, will enable him to adapt himself according to the requirements of his profession and of his life as a whole.

This general education should be forward- rather than backward-looking, action-oriented rather than theoretical. Its curricula, methodology, materials and techniques should be drawn directly from the life of the community and from the environment. Indeed, it is the 'environment'—in the broadest sense of the term—which, at least at the elementary level, provides the teacher with the richest material for observation, study and instruction. Nevertheless, the accent should be laid, as we have pointed out already, on methods of learning rather than on the transmission of knowledge.

As far as learning and initiation are concerned, caution is to be recommended in regard to the view—advanced, it must be said, by certain economists and agriculturalists rather than by educationalists—according to which agricultural education should be included in all school curricula, even at the primary level, either as a separate subject or as the general framework for all teaching.

On the one hand, technical education should not be exclusively agricultural, since this would have the result of confining rural populations to a certain form of activity and denying them access to secondary or higher studies. On the other hand, to subject children to agricultural education is to expose them to physical and psychological constraints which run counter to the very notion of education, and which may well provoke a reaction contrary to that desired. Furthermore, at the primary level, the socio-occupational integration of the child can be better

entrusted to the family and to the community than to the school itself. The school alone cannot instil the modern techniques which will increase productivity; as we have seen, the main obstacle to agricultural progress is not the resistance of the rural population to innovation, but the poverty inherent in their state. Again, development is accompanied by an increase in non-agricultural activities, even in rural areas. The school must thus provide all its pupils with the intellectual equipment which will enable them to adapt to a life whose rural or non-rural, agricultural or industrial context cannot be determined in advance.

Thus, stress should be laid on scientific method rather than on practical gimmicks: curiosity and a spirit of inquiry will, from the outset, be stimulated by the observations made when, for instance, comparing the different rates of growth of plants, under different conditions of watering, fertilization and light.

In the type of learning peculiar to vocational training the apprentice merely familiarizes himself with and learns to use his tools. General education, on the other hand, goes beyond their use, and reveals the principles involved. Thus, the wheelbarrow represents an extension of human strength, and is a creation of *homo habilis*. And the principles it involves—like those of pulley and lever (distance × force = torque)—are applicable in many other cases.

The teacher and his class

For a long time to come, the teacher will remain the keystone of education. It must be acknowledged that, invested as he is with the aura of authority, the teacher exercises a considerable influence on the children at a particularly impressionable age, related of course to the amount of time he spends with them. The value of the children's education is thus determined largely by their teacher's professional competence and, to an even greater extent, his intellectual and moral qualities. Adequate social status should match the importance of his role: more particularly, the conditions under which the teacher lives and works should not place him at a disadvantage in comparison with other professions.

The teacher

Many teachers, particularly in rural areas, have only a rudimentary stock of general and professional knowledge; sometimes they are totally unfitted for rural life. Some teachers know scarcely more than their own pupils. Not infrequently, the best teachers make for the cities, where they find greater opportunities in terms of promotion, lodging, the education of their own children, medical services and entertainment.

Under these conditions, teachers constitute the real bottle-neck of the system. In most cases, the lessons are a mechanical repetition of material taken from textbooks. Pupils are, quite literally, subjected to their lessons; the greatest concern of the teacher, particularly when his class numbers more than a hundred pupils, is that they should obey him passively. In no way are they introduced to practicalities. The teacher speaks, the pupils merely listen, without any opportunity of expressing themselves, of giving their opinions, or of reflecting on what they are taught. Their only equipment is a pencil or a pen, used in the great majority of cases merely to copy lessons, or for writing or spelling tests. Such lifeless education deprives the child of all initiative, stifles his personality and does not

develop any useful aptitudes for when he leaves school; he forgets rapidly everything he has learned, and more often than not he slips back into illiteracy. Moreover, this arid teaching is stultifying for the mind, because it is sterile and of no interest either to the teacher or his pupils.

A new role

It is to be hoped that it will be easier to remould teachers who have not been too deeply stamped by their earlier training and everyday routine, and convert them to the use of the new methods. A drive for renewal must thus seek to inject new life and spirit into the educational system. To this end, the classroom, the school and the educational apparatus as a whole must be integrated in the life of the community, receptive to its influence and enlisting its co-operation, but also entering fully into its aspirations and concerns and all aspects of its activities.

In his new role, the teacher's first concern will be his pupils; but he will also be the organizer of adult activities, and act as intermediary between the two groups. He cannot, however, be expected to meet everyone's requirements, since so many varied techniques are involved; he will thus have to call on the help of the specialists, available at the local or regional level.

Discovery of the environment

To place his authority on a sounder footing and to make his day-to-day life more agreeable, the teacher may, like any other villager, have his own plot of land, a few domestic animals or chickens; indeed, this may prove an incentive to keep him in his post. But he should not, as sometimes happens, make his pupils work for him.

In a word, the teacher must continue to educate himself and improve his methods; for this purpose, he should be able to draw on the community itself, using the facts of its existence as material for his teaching.

In the classroom, he will prepare his pupils for their future life as citizens and workers. Together with them, he will explore the local area and region, rounding out his teaching with elements of local geography, economics, industry and agriculture. The development plan, the administration and its organization, the environment itself (climate, geology, nature of the soil, vegetation), crafts, traditional and modern patterns of agriculture, customs, languages, traditions, etc., will also contribute to his lessons.

The teacher's first task is to familiarize himself with his school; but he must also know and understand the world outside the school. If he is not adopted by the community, renewal will be impossible.

A minor revolution

A minor revolution will transform the relationship between the teacher and his young pupils into one of collaboration. This will also affect the use of the classroom. Forming a team, organized and assisted by the teacher, the pupils will decorate the walls with their own work, their daily and weekly timetables, and syllabus for the year, as well as charts, diagrams and graphs showing the results of joint projects. In preparing the ground for a specific lesson, survey or study they will make a list of the equipment required and organize the work accordingly. Each

stage of the process should be accompanied by note-taking and the preparation of reports.

It goes without saying that pupils and teacher must not be left resourceless. A library containing textbooks, information material and works of reference dealing with geography, history and economics, with man and the environment and with matters of local, national and world-wide interest must be placed at their disposal to enable them to confirm the results of their own work and extract valuable information, ideas and lessons which will substantiate or invalidate their own discoveries and broaden their horizons.

The role of audio-visual media

As the means of instant dissemination over great distances, the mass media have won their place in the fields of education and culture. Radio and television have had an impact comparable to that of printing at the time of its invention; they have the additional advantage of combining sound and image in an immediate, multi-dimensional message. But information diffused and directed on a massive scale may lead to 'mental pollution' and alienation, if the individual has not been trained to use it properly.

In the developing countries, which suffer from a lack of teachers, books and premises, the audio-visual media, whose capacity—though admittedly limited—is badly or inadequately used, should render greater services than they do at present.

The following are some of the functions they might exercise, not in isolation, but in the context of global action on the environment: (a) the creation of a general atmosphere of development favourable to mental change; (b) the promotion of civic education and of the notion of the dignity of labour; (c) the dissemination of practical information concerning agriculture, health, family planning and other subjects related to development, in association with local action through the intermediary of technicians, monitors, extension workers or rural councils; (d) the transmission of broadcasts for schools, with particular reference to the training of teachers and vocational and technical training; (e) the broadcasting of 'second-chance' classes to enable young people who have abandoned school to acquire a minimum level of education and culture (obviously, such pupils should be able to take the same examinations as those who are regularly enrolled in school).[1]

Certain dangers must, however, be avoided. The first involves the belief that education can be provided by audio-visual methods alone. It is true that pictures are more effective than words, whether spoken or written, when they analyse and transmit a given type of know-how. But only the written word can provoke reflection, deliberation and rational thought. 'Abandonment to the image leads directly to alienation.'[2]

In the words of René Maheu, Director-General of Unesco, '... true modern education does not set the image against the written word; both are used in

1. Thus, in the Dominican Republic, the 'School Radio' service provides correspondence courses at the level of primary grades IV, V and VI. Enrolment in these courses rose from 1,500 in 1969 to 8,000 in 1972; in June of the latter year, the first group of 1,500 pupils (young people and adults) received certificates of primary studies.
2. Lê Thành Khôi, *L'Industrie de l'Enseignement*, p. 37, Paris, Édition de Minuit, 1967.

regular alternation, or merged in a composite process, for the single purpose of training the intellect. Only in this way ... can we preserve the unity of mankind itself, can we save it from splitting up into two camps: educated people—sole detainers of the logos—and "trained", or rather, conditioned people."[1]

Alienation may be individual or national; it may be technical, economic or financial, as well as cultural. Alienation occurs when a country is closely dependent on the outside world for its equipment, its programmes, experts and technicians. Such is the case with a number of school television projects, which are so costly that if technical assistance were suspended the country involved could not continue them. In the Niger in 1966, the school television experiment cost $8,000 per pupil, i.e. 140 times the unit cost of primary education ($56), in a country where the *per capita* income is only $90.[2]

The most advanced techniques should only be employed after a study of their cost, particularly in countries which lack energy resources, and after assessing the risks of dependence which they entail with regard both to hardware and software. Yesterday this was true of television, today it is the turn of education by satellite, whose immense potentialities must be weighed against these limiting factors. Poor countries might do better to exploit existing resources to the full, those media such as newspapers, mobile cinemas, film-strips, transistor radios or photographic slides which can provide appreciable services at little cost. What is important is to use a language which can be understood by the rural population at large, in order to establish and maintain communication with them, arouse their interest and secure their participation; highly literary language, which would make radio and the press the preserve of an intellectual élite, should be avoided. The language used should, however, be correct and precise, and such as may serve as a linguistic model at the national level. In certain cases, radio can contribute to the crystallization of a national language, thus affording a striking illustration of the multiplication effect of the communication media.

1. René Maheu, *La Civilisation de l'Universel*, p. 106, Paris, Robert Laffont, 1966.
2. R. Lefranc, *Les Techniques Modernes dans l'Enseignement, Comptes Rendus de Quelques Expériences: 1. Niger*, p. 42, Paris, Unesco/International Institute for Educational Planning, 1967 (French only).

Pedagogy and development

The school and the community

If schools are not to operate as closed communities, cut off from the rest of the community, and if they are not by their teaching content, methods and organization to bring about an exodus to the towns, they must be integrated within their community.

This integration does not—and must not—mean integration in a static, backward-looking context: it should be seen in a dynamic context as meeting the needs of a society and of an economy which are in continuous development. It therefore means that children and adults must learn to use the basic intellectual equipment which will enable them to understand the world and take appropriate action to change it.

Conversely, as we have said several times already, educational establishments cannot become centres of culture and development unless their action is closely co-ordinated with other actions in the economic and social sphere. These two kinds of activity are closely linked and should go hand in hand. The mistake made in certain programmes for community development, in India for example, is that they do not involve the support of the schools and fail to co-ordinate economic with educational activities.

A nursery for development

Integration means that there must be one type of school integrated with the community and not one school of a traditional type with a 'farm school' alongside. No experiment involving the coexistence of two different types of school has been successful, either as regards democratization or as regards development.

An integrated rural school would seek primarily to become a true emanation of the community it serves and of the society for which it is conceived. If it is to become a nursery for development, it should be governed by a council composed not only of its headmaster, his staff and the pupils' parents, but also of important individuals, technicians of the various government departments concerned (agriculture, administration, information), spokesmen of religious groups and representatives of local public and private bodies, etc.

If the formula is to be successful it is absolutely essential that these groups should be involved and that the approval of the central authorities should be obtained. The latter must face facts: a community school means a school governed freely by the community and organized in accordance with its needs, State intervention being limited to meeting expenses which go beyond the resources of the institution itself and to ensuring the observance of quality standards which must be identical throughout the country.

With the assistance of the competent authorities at the regional, or even the national level, this council should start by attempting to remove one of the most obvious causes of disparity between urban and rural areas, namely the fact that rural schools rarely cover the full curriculum of even the already reduced primary course. The consolidation of these school segments, which is the solution adopted by some countries, has been found technically satisfactory, but has the result of making the nearest school virtually inaccessible to certain villages, and adds a further complication to the problem of how to ensure greater equality of opportunity.

A school for each community

Ideally, each community would have its own school, erected by it, not in an isolated spot but at a strategic point where it could play its role as a development centre close to the various fields of action of the technical departments such as nurseries, plantations and cattle-raising centres. Moreover, the site for the school should be selected after taking into account the nature, quality, diversity and importance of the soil and the local animal, plant and aquatic life. Whenever possible, the facilities should include workshops, a library and a common room; the pupils should have their own co-operative and run their own clubs on an entirely self-governing basis.

Since the children will spend the whole day at school, whatever the distances from their homes, the council should make the necessary arrangements to provide them with a midday meal. For example, the nearest population centre should be asked to assume this responsibility.

There is no reason why several primary schools should not be linked together around a central school serving as a model, the teachers at this central school being able to advise and guide their colleagues and its equipment being used by all the pupils.

The time-table as well as the syllabus should of course be adapted to the rhythm and pattern of the life and work of the community (taking account of such circumstances as the changing seasons and the crop-growing cycle) on condition that the school meets such general requirements regarding length of courses, attendance rates and quality, as are applicable to all schools throughout the country.

The main services of the Ministry of Education should be able to solve problems of time discrepancies resulting from variations in the planning of the school year.

An organic link between generations

The school can be a useful preparation for active life if it opens its doors to the whole local community. Providing classrooms for the children during the day and serving as a training centre for adults outside school hours, the building becomes a meeting place for all who are interested in mutual education, cultural activities, sport and community projects.

Women should receive a special welcome for their own sake and for that of the community as a whole.

It would also be important not to neglect the many young people, mostly illiterate, who form a residual group of idle manpower easily lured to the towns in the often vain hope of finding a job.

Both for adults and for these young people, and also for various technicians who, as specialists of government departments, are called upon to make their contribution in the form of talks and presentations, the school would serve as a reception or leisure centre as well as a testing ground for experiments and various innovations. In this sense, all those using it could work together for their mutual benefit. It could be used in order to organize the introduction and propagation of new varieties of crops and the use of new instruments, and also for soil analysis working parties. The same applies to the use of insecticides, the making of light equipment items and cookery classes. The school premises could be used for exhibitions which would involve operations such as weighing, measuring, labelling and selection. The school could also be the scene of various contests displaying the skills required for the experiments, and in which adults and children would meet in healthy rivalry.

This new type of school, adjusting the pattern of its life to that of the community, pools all its talents and all its goodwill and puts all these resources to use in a common venture. The result is a sort of peoples' bank of knowledge which promotes education of the whole community by the whole community and operates as a generalized and at the same time individualized co-operative system based on the principle of 'give and take'. This conception, which assumes the transformation of society, is none other than that of lifelong education.

Environment and autonomy

An education integrated in the concrete realities of the community and the environment derives much of its material and subject-matter from them. It prepares young people and adults to take their place in life and society through their own abilities, by enabling them to discover and understand the world around them and by assisting them in their efforts to change it.

For this type of training, the life of the community and the natural environment provide the best 'support' and constitute excellent laboratories and, in short, the best school. The school building itself becomes the workshop for the general and detailed planning of work, the examination of collected data, the discussion and finalization of solutions, the improvement of methods, the recording of results and the charting of progress.

The ever-growing share of responsibility which the pupil must assume with the assistance of the teacher, in the organization, execution and evaluation of his work, the use wherever possible of the communication media consisting of radio, books, gramophone records, the press and, in certain cases, television, as well as the contribution of those who already possess a stock of knowledge, are the educational means available to a well-designed pedagogical system in order to make the pupil a potential agent and promoter of development.

Everything which it is possible to get the child to do with less and less assistance from the teacher is of prime importance. Education should enable the child to make his own discoveries, and to this end should stimulate his curiosity, whereas the familiarity of the objects around him tends to have precisely the opposite effect.

Once the child's curiosity has been awakened, the next step should be to formulate the questions that arise, for a problem clearly stated is a problem half resolved. Tentative experiment, error and doubt, together with perseverance, patience and courage, are all mental processes and qualities calculated to stimulate

and develop intellectual faculties at a very early stage, to strengthen reasoning powers and independence of thought and to lead to a better understanding of the world and of life, of nature and of humanity.

By the time he has completed the primary course, a child should have acquired the attitudes and habits of thought enabling him to continue to learn, to acquire a deeper insight into his milieu and his environment, and to appreciate the importance of the role he can play in them.

Education in early childhood

Recent research has shown the importance of early childhood (up to the age of four) for the later development of aptitudes and of the personality. If a pregnant woman or young child suffers from undernourishment or malnutrition due to caloric and protein deficiency, the development of the child's brain and nervous system is jeopardized and poor intellectual attainment at school age is the result. Lack of education can also slow down subsequent intellectual development. In the main such conditions are to be found in the least privileged sections from the economic and social point of view, namely the rural sections of the population.

Yet these form the nation's largest supply of talents and abilities as they represent a majority of the population. It is therefore not only the State's duty to improve their living conditions, it is also in its own interest.

However, in the present circumstances, to provide nursery schools seems quite beyond the means of developing countries. Many countries find it difficult enough to bear the cost of providing complete schooling for children between 6 and 11 years of age. Moreover, some parents might not be prepared to send their children to such schools. Finally, the poverty of the rural environment frustrates one of the objectives of the education of the very young: initiation to scientific and technical subjects by means of suitable games. If the example of the industrialized countries is followed it is expensive to import their educational toys.

We feel that at the beginning the best way of educating the very young is to educate their parents, particularly the mothers. The education given will be general in nature, dealing especially with nutrition, hygiene, health and family and domestic education.

In developing countries the young child suffers more than the adult from an unbalanced diet. Children between 1 and 3 years of age frequently suffer from protein deficiency. This may be due to ignorance, local customs or superstition.

Thus in spite of a higher level of education than that of other Ugandan tribes the Baganda 'are remarkably ignorant in nutritional matters and have shown themselves extremely recalcitrant to any suggestion of change. . . . Their cattle are emaciated, being a symbol of wealth and not a product for consumption. Milk is not a food, though it may be given to the sick as medicine.'[1] In other areas children suffer from severe protein deficiency in villages on the banks of rivers teeming with fish.[2] There are numerous food taboos in Africa which unfortunately apply

1. Dr Dean, quoted by H. Dupin in *Expériences d'Éducation Sanitaire et Nutritionneile en Afrique*, p. 14, IEDES, Presses Universitaires de France, 1965.
2. ibid., p. 16.

mainly to young children and pregnant women, that is to say to two categories of the population which most need a varied diet, rich in proteins (meat, eggs), minerals and vitamins (fruit).

Such customs must be fought, but with caution. Care should be taken to avoid showering 'lectures' and ready-made solutions from the outside. The people should be helped to see the need to change their ways and to bring about the necessary changes themselves instead of relying on the State. Of course some assistance from the State will be necessary, particularly at the beginning. In poor areas the State should take special measures to feed and safeguard the health of both pre-school and school-age children, and must as a matter of urgency train staff to be responsible for child health and education.

From the technical point of view, however, the poverty of the rural environment should not be exaggerated. In the most 'traditional' societies there is a wealth of games, particularly counting games, which can be used to initiate children to the world of science. In fact children themselves show remarkable powers of observation and creativity: a specialist in African anthropology writes: 'Everywhere we found children using the pith from a stalk of millet, bits of wire or discarded tins to make themselves "lorries", "cars", "aeroplanes" or musical instruments with an amazing precision and the most complex control systems.'[1]

Child education

A global vision of the environment

The child has a global vision of life, which requires his environment to be harmonized to a certain extent with his emotional development. At this age, he has only one teacher and only one classroom. What is unknown to him—or less familiar—must first be absorbed 'emotionally' before being absorbed successively through perception and understanding. It is integrated within a store of experience understood in general terms, before being submitted to analysis. Our purpose in drawing attention to these considerations is not so much to prove that a child's logic is more deductive than inductive, proceeding from the general to the particular. What is important is that, if his mind is guided in the right direction, it is capable of undertaking a more searching and scientific inquiry into the areas of knowledge with which he is broadly familiar, and of forming a strong bond with his environment, his home and the community around him.

If the equilibrium of this global affectivity is respected and allied to the impulse to invent and create, and to the motivation generated by the need to imitate adults, the child can be made to perform tasks developing his mental and physical powers and all his innate abilities.

By integrating a new item of knowledge with a larger unit of familiar matter, and by associating such units, the teacher can give the child a firm grasp of the relations existing between inanimate objects and living beings, between natural phenomena and the generating forces and governing principles which come into play. Although we are concerned with schools in rural areas, what is essential is not so much to give a rural or agricultural slant to the education they provide but

1. P. Erny, 'L'Enfant dans la Tradition Africaine', *L'Enfant en Milieu Tropical* (Dakar-Paris), No. 42, 1967, p. 30.

rather to integrate the child by means of this education within the community and his environment.

An integrated programme

In the first place, the community and its component parts, against the background within which it exists (living accommodation, infrastructure, organization, administration and politics, field of activities, land, agriculture, plant life and animal husbandry, vehicles and forms of transport, traditional crafts and forms of culture, etc.), can provide an endless list of topics and subjects for study, which incidentally overlap.

In the second place, the natural or ecological environment also provides the background for the community, but allows a more systematic classification and a more strictly scientific study: geology, botany, zoology, biology, the ecosystems of the biosphere, natural elements and phenomena, life, force, energy, the universe, all elements closely associated with existence, but approached scientifically.

The first group is concerned rather with economic, social, sociological and cultural aspects and the second with the natural elements of the environment. Both involve the use of accurate terminology, observation, measurements of various kinds and in three dimensions, and the study of specific problems and elements. Stress is, however, laid in the first case on the experimental method of discovering and apprehending the human environment, and in the second case on a more strictly scientific attitude of mind in investigating the natural environment. In the first case—while it is also possible to make inductions from the particular to the general, and deductions from the general to the particular—the method will consist in studying, analysing and drawing up a list of specific cases, and solving problems one after the other, or series of interrelated problems concerned with human activities. The two poles of the programme are, as it were, the natural sciences and the human sciences.

The danger of a list of subjects taught separately, especially at the primary-school level, is that teacher and pupil may get lost in them. Furthermore, in the case of education in a rural environment, any attempt at adaptation tends to give it an increasingly rural outlook; such ruralization runs the risk of creating a system separate from that of the urban environment.

An integrated school curriculum does more than simply embody training for practical life, or basic education aimed at imparting knowledge of the local community and the environment as the setting of the pupil's life. It would be more accurate to say that the latter provide the real, living concrete elements making up the subject-matter of teaching, and serve as a basis for education itself, the aim of which is to train individuals in an awareness of their responsibilities towards themselves, their family and society.

The purpose of education is the expansion of the mental and physical faculties, character-building, the strengthening of the personality, the command of language and its use in expressing logical thought and in the practical form of examples taken from the environment. Education also aims at the acquisition of habits, attitudes of mind and skills which will develop the personality of the individual and consequently fit him for effective and rational action. In this sense, education is the same for a town or a country environment, but should be adapted to local conditions. In the countryside the prime duty of the school is to give the child a suitable education in the rural context.

Practical and concrete education

To be concrete, coherent, clear and simple, primary education, which will provide from 80 to 90 per cent of the school population with their only stock of knowledge, would gain by being 'functional' and by relying largely for its subject-matter upon the environment. The term 'functional' is to be understood here less in the sense of 'employment—or work-oriented'; it refers rather to all the living examples taken from the child's own experience of his economic, social and cultural surroundings, and of the natural phenomena common to his environment.

Its practical side, which is designed to equip the child with mental and physical skills to be used as tools or instruments for his adaptation to society, the assertion of his personality, and his introduction to self-instruction, is therefore combined with a judicious amount of intellectual and psychological training. Instruction, games, observation, measuring and surveying should develop the child's psycho-physiological equilibrium; his common sense, intuition and self-confidence will then help him to gain sympathetic understanding, further knowledge and general control of the world around him. While awakening his curiosity and desire to learn, the teacher will encourage in every possible way his aptitude for grasping the forces at work behind facts and phenomena, relations between school and life, man and nature, work and existence, science and the power to change the environment.

Science, mathematics, geography, history and civics should be shown to have concrete associations with reality and add to the child's insight into the environment involving as they do his immediate surroundings: the area of a field, the size of a classroom, the nature and role of production, the various activities of the community. To ask a child to calculate the total time spent on a journey taking three hours on foot, followed by two days by bus and two hours by canoe, is not merely to give the arithmetic lesson in addition a concrete content, but to solve by reference to practical experience and psychological problems of what Piaget calls '*rémanence*'. The significance of this exercise is very much greater than that of teaching that two and two make four (which anyway is not always true). In addition to such exercises the rudiments of accounting should be taught so that the youngster can reckon up what he earns and make the best use of it.

A few examples will serve to illustrate this idea. To begin with, pupils might be introduced to methodology in the physical environment and actual setting of the class itself. A simple example, with possible variations, would be to conduct an investigation among the pupils (name, age if appropriate, language spoken, physical characteristics, distance from where they live, parents' occupation, other members of the family, etc.). The results may be used for various calculations on percentages or approximations, for drawing general inferences and for preparing maps, tables, graphs or diagrams. An investigation of this type enables the pupils to get to know one another and to reflect on themselves individually.

Pupils should become accustomed to agricultural tools, use them and begin to learn how to mend them. They should make small, useful pieces of equipment from simple materials (planks, crates, bottles, etc.); there is nothing like such elementary exercises as a stimulus to self-confidence and an incentive to go on making things with one's own hands.

Even at home, the child will be keen to continue conducting experiments and to carry out a number of investigations and observations on plant and animal life, growing crops, handicrafts, etc.

Teaching plan: the market

Item	*Observation*	*Work to be done*
The market	Detailed study of layout to discover any pattern.	Scale map with description.
	Fees paid by stall holders. Administration: hygiene	Revenue and expenditure.
Goods on sale	(a) Local and regional.	Detailed lists by categories. Sources; map to cover region. Estimating income of vendors over a period.
	(b) Imported.	Detailed lists; sources leading to study of manufacturing countries (e.g. bicyles, canned goods, textiles, etc.).
Transport	Local and imported goods.	Means of transport; map of roads (and railway lines); costing; census of lorries, etc. Their origin (from licences).
People	Numbers of buyers and sellers.	Graphical presentation to show variation, according to season.

The theme of the home may give rise to the following studies: building materials and methods, health, home economics, hygiene, nutrition, kitchen utensils, furniture and household equipment in general, family education and civics, traditions, culture and handicrafts.

Above, in the form of a teaching plan, is an example of a lesson on the theme of the market (sixth-year primary level).[1]

After this lesson, the pupils will be ready to extend their horizon. On the basis of the detailed local experiments to which the lesson has given rise, they can be led to examine different types of markets in the country and rural communities in other areas. A start can also be made on the study of national and international trade.

From the local point of view, pupils will be able to discuss ways of improving the market and the problem of food loss through insect infestation. Trade in foodstuffs can lead to an examination of the value of fertilizers in increasing yield and consequently income.

No agricultural education as such

What has just been stated shows that rural children should not receive an essentially agricultural education. At this level, agricultural education has not, on the whole, produced conclusive results. Without referring to the time when punishments meted out to pupils took the form of cleaning and gardening chores, the successes

1. See Houghton and Tregear, *Community Schools in Developing Countries*, p. 42, 43, Hamburg, Unesco Institute for Education, 1969.

achieved are the exception, and often due to isolated efforts by way of small-scale experiments which it would be difficult to introduce more generally.

It has to be recognized that the aims of agricultural education have often been linked to requirements which are not always educationally valid, such as the obligation imposed on a school to produce its own food for pupils and staff. This kind of approach might be profitable as a discipline for the individual, or in education vocationally oriented towards agriculture, but, given the age of the pupils, especially at primary-school level, it may result in diverting the child away from the land, despite his natural inclination.

The problem appears to be chiefly one of motivation, and in particular, at the level of primary education, that of the decisive influence of parents. It is difficult to imagine how, apart from exceptional cases, pupils could be tied down to the life of hardship endured by their own parents, who would spare them the same fate.

At the primary-school level, agricultural education should be related to agricultural work (on a limited scale and excluding hard drudgery) and allow of a selection and variety which will emphasize its intellectual side. It is even more effective when integrated with all the subjects in the curriculum, but a widespread ruralization of subjects is not desirable, since it would mean deliberately imposing an orientation which would be harmful to education in rural environments. Briefly, agricultural education should tie in with general education, not as an additional subject or even as a common denominator to a whole set of subjects, but as an element in general education defined as part of a system and of a programme integrated with the community and the environment. In this way, biology, nutrition and home economics might be normally associated with agricultural education as part of general education.

Thought should also be given to all the other subjects considered essential for rural education: rural and home economics, handicrafts and vocational instruction. An integrated system would make it possible to incorporate all these subjects by relating them to the events and background of community life as such.

Science teaching

Science—an element in achieving harmony

At a time when it is essential that education should stress the acquisition of logical thought processes and a scientific attitude, science teaching becomes of paramount importance at all levels. 'Science which has become culture' is an essential element in harmonious development.

For societies which have no scientific tradition and which tend to lay stress on authority and irrational, or even fatalistic, determinism, the belief that man is capable of breaking down the workings of the physical world into its component parts and mastering it to his own advantage constitutes in itself a revolution. It is possible to assimilate scientific knowledge and techniques without such a radical change; but science teaching does not consist in replacing one form of determinism by another which is just as sterile and incompatible with intellectual development.

Science teaching and traditional culture

On the other hand, no valid or effective attempt can be made to teach science by entrusting it to specialists from abroad who are ignorant of local culture, customs

and beliefs and specific local problems, since the elements forming the culture may constitute obstacles to be overcome or, alternatively, comprise advantages which should be turned to account. One author quotes the example of a people for whom the fact that the earth was round was inconceivable and unacceptable. By planning an imaginary journey from the brochures put out by a shipping company, pupils suddenly discovered for themselves that they came back to their starting-point. The value of the mental impact of such a discovery is out of all proportion with the time taken to achieve it.

The learning process

In childhood and up to early adolescence, the scientific part of the curriculum should be integrated, that is, it should reflect the unity of science and present it as a whole to the child, who, in his day-to-day life, perceives the environment as a whole. It will thus include not only mathematics and experimental science, but also health, hygiene, nutrition, agriculture and so forth.

Each lesson should give the child an opportunity to handle objects, to carry out experiments and observation, to discuss his discoveries with his classmates and his teacher, and to draw theoretical and practical conclusions from them.

Teaching should therefore be centred on the pupil. It should whet the pupil's curiosity, so that he is led to set himself problems to which he discovers the solution both by experimenting and by a logical sequence of thought. An inductive and experimental approach to learning will ensure that learning by rote is not simply replaced by a routine process of discovery. A series of heuristic activities includes special learning techniques such as stimulation and discrimination, acquisition of the mental ability to learn by trial and error, the formation and assimilation of concepts, and the testing of assumptions.

Keeping one's mind open to discovery and developing the habits of observation, investigation, perception and discerning criticism, constitute a training in reasoning which improves the mental faculties and leads to the establishment of facts and the identification of immutable processes, truths or laws. In the end, that which the mind invents may either take concrete form as a reconstitution of a real fact or phenomenon or give rise to a new creation grouping together several scattered elements. The ability to forecast scientifically, inventiveness and the power of re-creating, are proof that science has been mastered.

Applied science

Considerable importance is attached to science teaching on account of the profound influence it can have on individual behaviour and habits.

Yet the scientist who carries out a specific observation or a systematic critical study and bases his conclusions on experiments, without ever leaving his laboratory, probably tends to regard the techniques used as methods of verification, whereas the scientist working in the field regards them as tools for changing the environment.

In the field, science aims at producing immediate practical results; hence the major importance of applied sciences such as medicine and the engineering or agricultural sciences; general science teaching should be oriented accordingly.

Taken together, the applied sciences can cover almost all the subjects in the curriculum, including history and geography. Without going outside the scientific field, the pupil acquires a bird's-eye view of science; the flood of information he receives takes shape, his grasp of scientific questions is strengthened and his

interest is stimulated. In this respect instruction in the agricultural sciences gives him an immediate and real opportunity of learning in practice, applying his knowledge and connecting science directly with his environment.

By this means, through being led to analyse simple but stimulating problems, children would come to adopt a scientific attitude towards their natural and human environment. Thanks to instruction in science, adolescents acquire a better understanding and mastery of new techniques in the fields of agriculture, health and home management. By imparting the desired slant to science teaching, they can thus be properly equipped to wrestle with certain aspects of underdevelopment —such as malnutrition, superstition, health problems and the need for rural modernization—as they must be if they are to be given wider opportunities for action.

Science constitutes one of the main poles of education. Studying science, along the lines just indicated, is a necessity because life requires, if not a scientific training, at least rational behaviour. It is important to be equipped, even modestly, for experimentation. However poor the environment, however small its potentialities, it is always interesting if it is studied, if its problems are discerned and if an attempt is made to solve them. Need is the spur of action. It is a question of attitudes. And education must create such attitudes, both in the town and in the countryside.

Educating the adolescent

For the child from a rural area, the transition from the primary school to the secondary school may be a formidable ordeal.

A difficult transition

In most cases, the child must leave his family in order to pursue his studies in a distant establishment and a totally different setting, possibly in a town. It is true that, with approaching adolescence, the child's image of the world is expanding considerably; at the same time his critical faculties are developing, he is gaining more insight into the complexity of society and of nature and he is growing more conscious of his own capacity to observe them objectively and to become better informed. The fact remains, however, that a radical change of teachers, surroundings, atmosphere, syllabus and method is calculated to disconcert him, especially if he is unprepared. Instead of having only one teacher, as hitherto, he usually has a different teacher for each subject.

During this period of transition, and to help him to become acclimatized, it would be well always to work outward from the particular to the general, from fact to concept and, whenever possible, to draw upon the environment, in the way to which the child was accustomed at his primary school, for all the examples which will enable him to find his feet in his new surroundings.

Discernment and maturity

In the first place, emphasis will be laid on more intensive training in the handling of language, with a view to achieving the highest level of complexity of expression and abstraction of thought.

Mental processes leading from logic and common sense to abstract thought must be modelled on the scientific method, which requires the child to increase his capacity for learning from mistakes, for engaging in speculation, followed by confirmation or refutation and for distinguishing between truth and fallacy. The adolescent will sharpen his power of discernment and his critical faculties by comparing the present with the past and drawing conclusions from the example of earlier civilizations, by becoming aware of the contending forces involved and by gaining insight into the ideas and motives underlying human intercourse. He will strive for greater knowledge and understanding of the world in which he lives in order to influence it more effectively.

Secondary education has quite a marked influence on the adolescent who is preparing to take his place in life as a producer, citizen and adult human being. With this end in view and to an increasing extent, he must be capable of shouldering responsibility for his own work, of planning, organizing and conducting his studies, of going more thoroughly into the subjects in which he is most interested and of benefiting from the advice of his teachers as to how to enrich his personality and gain direct access to the original sources of learning, science, literature and philosophy. On completing the secondary course, the pupil should have already acquired an adult's maturity, if not his experience; he should continue to be interested in adding to his knowledge and should be ready to play his full role in society.

He will be receptive to the idea that life is a challenge to him and all other men. He will appreciate the need for work, but also the value of leisure.

Polyvalence and adaptation

Since the adolescent will have to give serious thought to the occupation for which he intends to prepare himself, it is good for the secondary school to offer, whenever possible, a vocational training course (of his own choosing) concurrently with general studies. In short, it should bring together under the same roof the various types of training commonly known as secondary education and technical, industrial, agricultural or commercial education, and even teacher education: this is the idea of a polyvalent school, with its multiple choices, which is not a luxury but a necessity.

The choice of site for an institution of this kind should depend on a number of factors which could be described as functional, for a large portion of the content of the syllabus would be closely associated with the characteristics of the social and natural environment (lakes, forests, mountains, factories, mines, farms, commercial activities, etc.). If certain facilities are lacking in the environment, it would be better not to provide the relevant type of training than to create them artificially. On the other hand, the principle of adaptation to the environment does not imply that the institution can dispense with the workshops, equipment and materials required for all these experiments. In the case of decentralized establishments, the pupils might be lodged with families, since full-time boarding has the disadvantage of cutting off the adolescents from their surroundings.

Lastly, as regards its intellectual level, technical training in agriculture should be complementary to the other disciplines and should be an integral part of a global strategy for the improvement of secondary education.

Agricultural science

At this level, agricultural science can become a real subject, studied in the framework of interdisciplinary teaching.

So that this may be possible, the teachers ought to meet regularly to discuss and adjust the cross-references of their respective subjects. Problems encountered in the agriculture course will be studied in the science course, and field work within the context of science subjects will be directly applied to an agricultural awareness. Plant identification will be the occasion for an introduction to the biological processes connected with silage, the study of the composition of soils will be related to that of mineral fertilizers and the latter will be linked with the life-cycle, starting with the growth and composition of plants. Mathematics will provide an opportunity for the calculation of weights, measures, costs and yields and agricultural equipment affords numerous examples of the application of physics. In geography, it is natural to apply the same principle of interdisciplinarity in the study of climates, waters and forests, which is connected with that of harvests, varieties of crops, diseases such as malaria, and insects such as the anopheles which is the carrier of malaria, without ever losing sight of the realities of the environment.

On account of the concrete, practical and functional grounding which it provides, agricultural education has a legitimate place in secondary education. It constitutes a sound introduction to adult life as a citizen and a productive worker, gives the pupil a realistic appreciation of fundamental economic problems and enriches science education.

It is of the utmost importance that all steps be taken to ensure that agriculture is treated on the same footing as other subjects and not taught in a separate institution. This implies that, as regards the organizational structure, it must be integrated within the establishments dispensing general secondary education. Even if agricultural education can only be provided as part of a rural vocational training project housed in a separate building, the pupils should be assured of the equivalence of their studies to those pursued in establishments with a different educational bias and transfers between establishments should even be made possible: the decision on whether to enrol for an agricultural or a general science course should only be a question of option. The graduates of the respective establishments would then have the same status both as regards their professional qualifications and as regards their general educational level. Although his task may be somewhat different from that of his colleagues, the teacher of agricultural and technical subjects should be on an equal footing with the others in all respects (level of training, diplomas, academic rank, etc.).

Rural vocational guidance

Career prospects may be considered outside the scope of secondary education, rather the concern of specialized training institutes operating at the higher education level. It must be borne in mind, however, that it is at the secondary level that the pupils are preparing to choose a career and are beginning in fact to receive some vocational training (particularly those intending to earn their living as technicians). It is therefore already essential at the secondary level to inform pupils of the real prospects for wage-employed workers in the rural sector. It would even be desirable for them to have an opportunity, while attending the

establishment, of seeing for themselves that there is hope of such potentialities developing in the immediate neighbourhood.

As one of the consequences of an educational reform geared to rural development, the school would turn out active people qualified to seek employment in a productive sector of the economy. In Unesco's experimental projects in the two provinces of Canas and Canchis of Peru and at Namutamba in Uganda, the content and methodology of education courses for adolescents are oriented to their employment prospects in the region (in agriculture, cottage industries, various trades). At Namutamba, the pupils are encouraged to form their own clubs where they can both enjoy themselves and gain an introduction to rural activities, leading later to the creation of clubs for young farmers, craftsmen, technicians, rural extension workers, etc. The clubs of this kind which have been founded in the United Kingdom, Kenya (4-K clubs), Jamaica and the United States (4-H clubs), where the members can freely discuss their problems, have undeniably met with great success.

However that may be, the towns and countryside are full of a fluctuating mass of young people under 20 who are unemployed and mainly illiterate. The recruitment drive of national civic youth movements or organizations succeeds in attracting only part of this mass.

Solutions still have to be found to the problem of how to secure the full participation of these young people in the national development programme, which without their help would be seriously jeopardized.

It is necessary to 'mobilize' their energies, educate and train them, give them responsibilities and provide them with the means of contributing to the national effort. Scarce though it is, capital is often invested in essential infrastracture projects on which unemployed or underemployed youth could be occupied. However, no scheme for enrolling young people for such work in exchange for compensation in kind together with a relevant training course could be expected to work well without their voluntary support.

It might be worth considering inviting the young people themselves and indeed the whole community to join in serious and frank discussions of this problem, with the aid of planners, administrative officers, specialists and government representatives at the local, national and international levels, provided that they are ready to make the necessary efforts and even such sacrifices as may be called for. In any case, whenever an activity is being planned for this group, provision should be made for a technical training programme (covering both theoretical knowledge and practical skills), geared to a specific occupation or job, and, in the case of the youngest members of the group, for prevocational training with a strong bias towards general education.[1] The questions dealt with should include the main characteristics of the economy and the society in question, and should be designed to sensitize the young people to the relevant problems in order to awaken their desire to put these right and make their own contribution to national development.

Experiments in community education

Various countries have been seeking a model for a new type of school in which the interweaving of community activities and agricultural work will provide the adolescent with the attitudes and abilities necessary for development.

1. cf. Lê Thành Khôi. *La Jeunesse Défavorisée dans les Pays en Voie de Développement*, Paris, Unesco, 14 January 1972 (ED/WS/282).

This is how a Philippine educationist describes the 'barrio high schools' which have produced interesting results. The barrio high schools have several objectives:

First, *educational*: to enable every boy and girl of high school age to complete the secondary course; to raise the educational level of rural communities; to strengthen the holding power and thus reduce the percentage of drop-outs in the elementary grades; and to provide a close articulation between the elementary and secondary levels of instruction.

Second, *economic*: to encourage and guide parents to raise their income by improving the productivity of their farms so that they can pay the tuition fees of their children, and to enable the students to earn part of their school expenses by engaging in home projects.

Third, *social*: to reduce if not to eradicate juvenile delinquency by having the young people usefully occupied all the time....

The high school classes are held in the elementary school buildings of the area. They use the classrooms, the garden and workshop tools, and the home economics buildings and equipment when not in use by elementary classes. Some enthusiastic parents have constructed additional buildings with funds and materials provided by themselves and others. Additional classrooms are not needed, as it is possible to get along with het existing rooms by staggering attendance of high school classes....

After one year's operation ... the barrio high schools have emerged successful.

Achievement of the set goals has been:

1. *Educational*

More sixth-grade pupils were able to continue their studies. Academic achievement of the students was remarkable, e.g.

In the first-year reading, the median score of the students of the main high school was 4.40, whereas in Cabaruan it was 7.18; in Bactad, 9.54; and in Cabuloan, 7.73....

In the first-year general science, the main high school median was 15.45, whereas the corresponding figures for Cabaruan, Bactad and Cabuloan were 20.55, 25.45, and 24.39.

In first-year arithmetic, the main high school median score was 12.00, whereas the corresponding scores in Cabaruan, Bactad, and Cabuloan were 11.59, 17.88, and 21.75. In the second year, the median scores were: main high school, 11.67; Cabaruan, 15.83; Bactad, 17.88; and Cabuloan, 21.75.

There was considerable improvement in environmental sanitation of the community, including an increase in the number of toilets, better cleanliness in home yards, more privacy in the homes, and the construction of 'blind drainage'. Students and parents learned the importance and uses of compost. The holding power of the barrio high schools was significantly higher than that of the main high school.

2. *Economic*

Of 126 students in Cabaruan, 72 were engaged in poultry raising; 31 in piggery; 118 in home gardening; 31 in cattle raising; and 23 in other projects, such as bag making, slipper making, and basketry.

In Bactad-Cabuloan, 23 had mudfish and 'gourami' projects; 31 had orchards, 30 had piggeries; 37 had poultry; 38 had home gardens; and 37 made baracbac bags and slippers. The farms were producing eggplants, tomatoes, corn or mongo.

Among parents, 112 are now using some of the modern methods of farming, and have increased production.

Piglets given to indigent students have been sold and the profits distributed.

All the female goats bore kids. Some of them were sold, and half the profit went to the students.

3. *Social*

The problem of juvenile delinquency in the barrios, has been definitely solved. According to the authorities of Urdaneta, not a single crime was committed in the three barrios by young people during the year.[1]

1. Pedro T. Orata, 'Barrio High Schools and Colleges', *International Review of Education*, Vol. XII, No. 4, 1966, p. 475-8.

In the Democratic Republic of Viet-Nam, the pilot rural school of Bac-Ly was built by teachers and pupils, with the help of local farmers. It won its claim to fame by setting up a 'green laboratory' designed to illustrate biology lessons and to introduce the pupils to modern methods of cultivation and stock-farming. When manual work was added to the curriculum, it set up a woodwork shop and a forge and organized domestic-science teaching, starting with needlework. Making an active contribution to production, teachers and pupils undertook to combat the insects which threaten the crops, introduce azolla as green pasturage, test a new strain of rice (which has since been adopted by the co-operatives), develop the cultivation of water taro and other starches, and improve methods of stock-rearing and fish-farming. At the same time, teams of volunteers taught adults and, in conjunction with other services, took part in campaigns of hygiene and disease prevention, as well as the cultural movement. The final stage in the process of integrating school and environment was the formation of 'study and work brigades': all the pupils, boys and girls alike, study for half the day and work for the other half in the local co-operatives, each being given a task suited to his or her age (11 to 14) and receiving payment according to a system of work points, exactly like the co-operative workers.[1]

Higher education and research

Up to the present, higher education has contributed little to the rural development of the developing countries. There are many reasons for this and they need to be analysed if the situation is to be remedied.

The main reason is that, even more than lower-level scholastic institutions, universities have no direct contact with the life of rural communities. They usually provide theoretical training which as often as not is imported from the industrialized countries, where conditions and problems are different. Whereas in these countries a considerable number of farmers' sons are to be found studying in faculties of agriculture, the majority of students in these faculties in the developing countries come from the towns and have no knowledge of country life. They have often settled for agriculture because there was no room for them in faculties carrying greater prestige: they are therefore not motivated. In addition, some lecturers from the developed countries do not always make an effort to adapt their teaching. The curricula are also overloaded and there is consequently no time for research. When research is undertaken, it is often carried out in a pedantic way and has no bearing on specific development problems. Specialized research institutes may be located next to faculties of agriculture without any contact being established between one and the other.

The result is that although the faculties of agriculture in the developing countries are expensive to run and award degrees, diplomas, etc., the training they supply does not correspond to the real needs of their countries. Higher agricultural education is an expensive undertaking on account both of the equipment required (farms, machinery, etc.) and of the low number of students (the staff/student ratio varies from 1 : 7 to 1 : 10, which means that the cost of training a student is much higher here than in the developed countries).

1. Vu Can and Luu Duc Moc, 'Bac-Ly, École Pilote du Deuxième Degré', *L'Éducation en R.D.V.*, Hanoi (Études Vietnamiennes, No. 5, May 1965).

In order to reform higher agricultural education, it is necessary to define clearly the role it should play in economic and social development. Although problems vary from one country to another, certain principles may be considered as of fundamental importance:

First, faculties of agriculture must train both high-level specialists and high- and medium-level technicians, for whom there is a crying need: in many countries the former outnumber the latter.

They must also give their former graduates further or advanced training 'on the job' as well as disseminate the most up-to-date knowledge among rural communities, both through the individual action of teachers and research workers and by means of the audio-visual media.

Second, research must be linked to teaching and both must be used to find the solutions to specific development problems. Research is not a luxury but a necessity. It alone can give new life to education and lend it a 'national' character, both in terms of content and textbooks as well as teaching staff (replacement of technical assistance staff by nationals of the country).

Not only technical aspects but also, and probably increasingly so, political, social, economic and cultural aspects enter into the development of agriculture. A multi-disciplinary approach is therefore called for. Studies might, for example, be made to determine:

From the sociological point of view, the extent to which social structures, traditional values, land-tenure systems and customary law on the one hand and European colonization, technical transformations and the market economy on the other hand have favourable or unfavourable effects on agricultural development; how to reinforce or neutralize these effects; and the consequences of such development on the distribution of income and the conditions of rural workers.

From the technical point of view, how the environment and the various methods of land use and cultivation can enrich the land or diminish its fertility.

From the economic point of view, how to decide on investments (starting with the least expensive—improvements of crop varieties and methods—followed by the use of fertilizers, irrigation, etc.) and where to make them (starting in areas where conditions are most favourable), etc.

From the institutional point of view, how to plan extension services (designed to bring the results of research to the knowledge of farm workers), marketing services (co-operatives) and credit facilities and ensure that price levels are such as to give the farmer an incentive to make innovations.

From the pedagogic point of view, what are the best methods of training senior agricultural personnel and educating the rural population.

If the teacher is to have time to spend on research, his teaching work must be lightened and the currently over-heavy curricula revised with a view to eliminating subjects which are useless or of marginal interest.

Third, the multi-disciplinary approach mentioned above in respect to research is also vital for teaching.

Apart from the traditional disciplines (agriculture, soil science, hydraulics, veterinary science, rural engineering, etc.) the student should be taught some elements of general and rural economics, planning and management, treatment and conservation of foods, marketing (market research), sociology and even rural psychology.

The extent to which the disciplines are integrated depends on the level of national development. At a certain stage the main need is for breadth of competence (instead of training agricultural specialists and veterinary surgeons separately, it is preferable to train agricultural specialists who are also veterinary surgeons); and later, as and when the agricultural sector develops and deversifies, a greater degree of specialization becomes necessary.

The structure of the curricula should thus develop, so as progressively to include, whether as optional or compulsory subjects, all such as are needed for the country's development and at the same time eliminate whatever is out of date.

Fourth, to train senior personnel who are not only qualified in their own fields but also and above all are capable of thinking for themselves and of acting, theory and practice must alternate and go hand in hand in their training.

Agricultural faculties should be located in rural areas (without being too far away from the university for contacts to be maintained). This is the only way of preventing them from becoming 'ivory towers', of plunging students and teachers into the hard reality of rural life and of giving them the desire and the resolve to improve it. The developing countries need 'field' workers. Students and teachers should make an effort to do manual work, run the university farm at a profit or at least without a loss (an excellent way of learning about management problems), engage personally in extension work among farmers and farm workers and take into account their comments and criticisms, which are often dictated by common sense.

The university farm should fulfil four functions:

(a) provide practical teaching aids for modern techniques in crop and animal production;
(b) provide a laboratory for management and economic studies;
(c) provide facilities for field research problems;
(d) provide production demonstrations for local farmers.[1]

The extent to which these sometimes contradictory tasks are successfully and simultaneously carried out and to which the university farm serves as a forum for a dialogue between the university and the farming communities will determine the efficacy of the contribution higher agricultural education makes to development.

Adult education

The role of adult education

Adult education is of the greatest importance to rural development, for adults are producers and have political responsibilities and as parents can exert a favourable influence on their children's education; they too must be educated, so that they do not oppose the new values and techniques taught to their children.

Illiteracy, of course, does not necessarily constitute an obstacle to increases in agricultural production and the introduction of innovations. Agricultural extension work can rely on oral techniques for the purpose of teaching illiterates how to improve their methods of cultivation, to use new tools, to keep down insects and plant diseases, etc. Personal contacts and contacts with the town, as

1. FAO/Unesco/ILO, *World Conference on Agricultural Education and Training, Report*, Vol. I, p. 28, Copenhagen, 1970.

well as the audio-visual media, may take the place of formal education and lead to changes. Even then, however, the effectiveness of extension work may be increased by the distribution of written material (newspapers, posters, pamphlets, etc.) and once it is no longer a question of introducing techniques but new forms of organization, illiteracy becomes a brake: only farm workers knowing how to read, write and do simple arithmetic can run a co-operative, keep its accounts and plan in advance. In the same way in the industrial field, only literates can feel at home in a technologically developed industry.

Governments which have given priority to mass literacy work have rightly found in it a powerful means of mobilizing the population for the purpose of national construction. No transformation is possible if the population does not feel intensely the need for it and is not ready to devote its efforts to it.

Literacy teaching brings about this state of awareness so long as it takes the form not of didactic teaching but of a dialogue aimed at training the adult's powers of judgement, and rendering him capable of assuming responsibility and making an impact on his environment.

Some countries have successfully carried through mass literacy campaigns. Others have had recourse to 'community development' or 'self-help' programmes, acting on the premise that rural development must be brought about by the population itself, and felt as a need and not as a task imposed from outside. Through information, dialogue and explanation, through education in its many forms—and, in the case of self-help programmes, using instructors and organizers chosen by the community itself—efforts are made to induce the rural population to take part in the process of change, though it should be noted that educational activities of this sort leave the economic and social structures unchanged.

Functional literacy

In 1964, Unesco launched the concept of 'functional literacy', conceived as a method of training for development. Functional literacy work differs from so-called traditional literacy work, which it complements, in that it ceases to be an isolated operation and is geared to clearly specified economic and social objectives. The acquisition of reading, writing and counting mechanisms is integrated with occupational training. Functional literacy is therefore an intensive approach aimed at teaching usable knowledge and skills and also at awakening a new attitude towards modernization. It is also a selective approach: it is intended for those groups which, on becoming literate, can make the most effective contribution to progress, mainly the unskilled working population in developing sectors and areas.

The Experimental World Literacy Programme today comprises projects of varying importance in some twenty countries: in 1971 these projects involved over 235,000 adults and 8,000 teachers. Teaching methods and materials are prepared in the light of the information derived from a study of the environment and of the priority problems needing to be solved: for example, technological adaptation in industry, or, in the rural environment, the adoption of new cultivation techniques; the introduction of new crop varieties; improvement of the arrangements for production and marketing (co-operatives, self-management, agricultural credit facilities, etc.); or the education of women in nutrition, hygiene and child-care.

Responsibility for planning the project in this way is entrusted to a multi-disciplinary team (educationists, economists, sociologists, agriculturalists, etc.),

while for implementation recourse is had to the services of not only teachers but also various people from the socio-occupational environment itself—agricultural extension workers, ancillary medical staff, foremen, farm workers versed in modern techniques, etc.—those being given some instruction in teaching methods.

The *Practical Guide to Functional Literacy*, published by Unesco,[1] highlights two basic principles of this approach:

Convergence. Each problem must be studied from all its angles: technical, scientific, socio-economic and mathematical. Reading instruction should convey notions with a bearing on this problem. It is by and through this study that the acquisition of knowledge and training are effected. The study phase proper is followed by an action stage, namely the adoption of new patterns of behaviour. Reading, writing and arithmetic are incorporated into both phases.

Integration. A functional literacy programme curriculum comprises two kinds of integrated activities: practical on-the-spot training (model plots, workshops, yards, etc.) and theoretical training (elements of technical and scientific knowledge and of socio-economics, functional arithmetic, oral and written expression). The operative modes of this integration are obviously subject to the imperatives of production, climatic conditions, the organization of work, etc.

In the agricultural environment, theoretical and practical activities can be organized within the framework of a single work unit. Literacy training, for its part, is integrated with the other training components. The message embraces the totality of the theoretical and practical information to be utilized in solving a given problem, in the frame of reference of a training operation which is subject to continuous correction. The message is transmitted through the spoken and written language (alphabetical and mathematical symbols, pictures) and through 'doing' (demonstrations, practical training).

The subject of the adult's study is directly linked to his work. Thus to prepare a rice seed-bed (operation in Befandriana, Madagascar) the farm worker must be able to read figures and dates (indicating the best season for transplanting rice), to draw parallel lines, to understand two-dimensional space and to work out the size of a plot.

The adult who becomes literate is not a pupil but a participant in a global training activity. Similarly, the group is not a 'class' in the usual meaning of the word, nor the instructor a 'teacher'. He is a leader who must help the group to become aware of problems, to express itself and to take action so that each member of the group feels he is being of use to the community.

The experiments undertaken in the framework of the Experimental World Literacy Programme have pointed to some lessons which will be of value in combating illiteracy more effectively. These experiments, however, only affect a small proportion of illiterates: 235,000 illiterate people out of the 783 million in the world. This may be explained by the fact that functional literacy must be adapted to a large variety of situations.

How then can it be widely diffused? Once we can answer this question, we shall be in a position to say that functional literacy has not only served to improve the prospects of a minority. For example, the case of the United Republic of Tanzania may be quoted, which, on the basis of a successful functional literacy

1. Unesco, *Practical Guide to Functional Literacy*, p. 93 et seq., Paris, Unesco, 1973, 170 p.

experiment, seriously intends to make the whole population literate by 1976. As mentioned above, functional literacy work complements more traditional literacy activities having educational objectives of a more general nature (community development, civic instruction, home economics, family education, etc.). In short, it may be said that every literacy programme must form an integral part of a development programme covering the rural community as a whole.

Training of instructors

All the reforms proposed above will be fruitless if the main agent—the instructor—has not undergone a transformation himself and if the teachers have not become 'leaders and organizers with a genuine love for the rural life to which they will have to devote themselves, in whom knowledge has not dried up the springs of enthusiasm or self-abnegation'.[1]

The role of the educator

We speak of 'educator' and 'instructor' rather than 'master' or 'teacher', thus placing the emphasis on their changing role.

According to the traditional view, the master is a person who 'knows' and transmits his knowledge to the pupil, who does not know; the 'teacher' instructs the 'learner'. This process hampers rather than encourages development of the creative faculties of the learner.

True education, whether for children or adults, implies free and critical participation on their part, a dialogue between them and the instructor, the conscious grasping of reality through words and the will to act upon this reality.

As the International Commission on the Development of Education said in its report, published under the title *Learning to Be*: 'Any system according educational services to a passive population and any reform which fails to arouse active personal participation among the mass of learners can achieve at best only marginal success.'[2]

This conception implies that the teacher is becoming a true educator, who lays less emphasis on the transmission of knowledge than on the training and development of the learner's personality both in and out of school, and who is capable of stimulating and co-ordinating the activities of all the development agents who have to co-operate with him (agricultural extension workers, industrial technicians, nurses), not to mention the population itself, so that all concerned may educate themselves while educating others.

Problems

The scope of the task is considerable, being to provide both refresher training and training simultaneously. Not only are most rural teachers in fact unqualified, but they must also be transformed into leaders and organizers. Those responsible for training (inspectors, teachers) are not usually themselves trained to conduct

1. *World Conference on Agricultural Education and Training, Copenhagen, July 1970; Report*, Vol. I, p. 81 (opening address by René Maheu, Director-General of Unesco).
2. Edgar Faure *et al.*, *Learning to Be*, p. 222, Paris, Unesco, 1972; London, Harrap, 1972.

their work along these lines, especially when the basic elements of rural life are unfamiliar to them.

The rural schools are generally less well equipped than schools in urban areas: classes are normally larger and there are not enough teachers, particularly in the subjects essential to the regeneration of rural education, such as science and mathematics. Even among the best teachers, isolation often leads to stagnation

Should prospective teachers be selected and trained with a view to their appointment in a given locality? The need for integration in the area is an argument in favour of that procedure, as the teacher must seek inspiration from the environment for the content of his teaching and the methods he uses in it, as well as stimulating the efforts of the other agents of local development. Moreover, if this procedure is followed, teaching in the language of the area should present no problem.

One expert quotes the case of a headmaster in Haiti who has taught in his community for over twenty years. He has made large contributions to the maintenance of the school and the establishment of a co-operative for electrical energy production, which has been functioning for seventeen years and is financially sound. This is perhaps an exceptional case. However, when a teacher is transferred too frequently to another school (as, for example, in Upper Volta where a quarter of the total number of teachers in service were transferred to other posts in 1971), his integration in the *milieu* suffers and he can no longer make an effective and lasting contribution.

On the other hand, too long a residence in one area may dim the teacher's original enthusiasm and initiative. Although it is generally advisable for a teacher to work in the *milieu* from which he stems, some may prefer not to work so close to their families. In other areas hostility of ethnic or tribal origin may be aroused by the arrival of a 'foreigner'.

The problem is therefore by no means simple and efforts must be made to reconcile, according to the specific conditions in each country, the need to adapt to the life of the area with the need for professional mobility, which encourages national integration through the mingling of the different sectors of the population.

Above all, it must be borne in mind that motivation is the main factor. If the teacher has no will to work, the rest is fruitless. But this motivation cannot be taught, and it is rarely the result of a sense of vocation, especially among teachers in rural areas; it derives rather from the general political, social and economic conditions. Teachers must enjoy satisfactory salaries and living and working conditions. The new teacher must not be left to fend for himself—he must be helped by his more experienced colleagues and receive frequent visits from pedagogical advisers. The lack or obvious insufficiency of such advisers in rural areas is deplorable.

Nature of the initial training

Present training programmes are generally town-oriented, and must undergo a dual transformation. One side of this transformation relates to the need to include in the curriculum an environmental component—although this does not mean that teacher-training methods will differ, depending on whether the teachers are to be appointed in rural or urban schools. The other relates to the educator's new roles: teacher of children, organizer of adult activities and co-ordinator of the activities of the various development agents.

Training will therefore include introductory courses on development, and courses on pedagogy and educational psychology and sociology. It is particularly important that during his teaching the educator should benefit from the practical work of his more experienced colleagues, whose methods he will be required to evaluate and criticize. It is less important for him to know all the theories than to know how to teach children to read, observe, think, reason, speak and act. Thus a reading lesson should provide the child with the opportunity to read, think, criticize and express his tastes and preferences. The educator will also have to learn how to make teaching aids with local materials and devise appropriate methods for testing knowledge.

In teacher training the emphasis will be on two kinds of methodology: one consists in the teacher familiarizing himself with the method aimed at 'learning how to learn', the other in integrating the 'subject-matter' (arithmetic, science, history, geography, etc.) into the subjects or themes of the curriculum.

In quantity, quality and relative balance, this training will have to conform to the national standards in force.

Training will also have to cover the techniques and methods for encouraging self-instruction: surveys, outline presentations, demonstrations, experiments, discussions, debates, round-table talks, seminars, workshops, etc.—all applying the principles of group dynamics, team-work and individual work. Initiative, inventiveness, practical examples and exercises in improvisation and reflection on concrete problems will be encouraged in so far as they enable the pupil to learn, to find a frame of reference in the environment and at the same time develop his own personality.

However, a minimum of scientific, technical and cultural knowledge and a good linguistic training will be essential. Like his pupils, the teacher must also learn, improving his techniques and extending his knowledge for the good of his teaching. In these circumstances, it is essential that—especially as regards science teaching and command of language—he should be as well equipped as possible from the start. As far as practical knowledge is concerned, he will accumulate this as he goes along, in contact with the community and with colleagues in other development sectors, who will in turn use his experience of teaching to pass their own knowledge on to others.

Training colleges for primary and lower secondary teachers should be situated in a rural environment, in order for future teachers to have first-hand knowledge of the economic and social problems of such areas.[1] Study of these problems should be an integral part of their training, as should teaching practice in practical work classes associated with the college.

During his training the future teacher should also be introduced to the principles of adult education.

The teacher's approach to his work, which he will not undertake alone, must be progressive, cautious and persevering, for country people the world over are realists who are more impressed by facts and practical examples than by book-learning. The teacher-instructor must therefore be a patient, thoughtful and modest person, aware of the difficulties of his task.

1. In Cuba a new strategy has been conceived (1971) whereby all general secondary education, from lower secondary on, takes place in a rural environment, curricula being linked with agricultural production (Rolland G. Paulston, *Cuban Rural Education: A Strategy for Revolutionary Development*, p. 23, Pittsburgh University, July 1972).

Those who really wish to teach country people must first be their pupils and win their confidence. They must familiarize themselves with social conditions and ponder the value of certain practices from an ecological view point, decide which factors could in different circumstances have a positive instead of a negative influence or vice versa, and identify the social groups whose support must be won. Any advice they can give must be given in a friendly way, on a basis of equality. True country teachers are also leaders and organizers, encouraging local groups and initiatives and, without undue tactless theorizing, spreading new practical knowledge to enable the rural community to reach a higher level of development.

Any progressive action which they undertake should lead to visible examples of success and collective progress, which are so many battles won in the war against ignorance and poverty. The goals they set themselves must therefore be realistic.

Continuing training

All teachers—those in country schools even more than those in towns—need continuing in-service training in order to improve their knowledge and qualifications and keep up to date. Initial training and further training should no longer be considered as two separate entities.

How should continuing training be organized?

The first necessity is an efficient network of teaching advisers (more important than inspectors), who must be given adequate means to travel around. These advisers should for preference be based on a training college in a rural environment rather than on a central inspectorate. In this way they would find the atmosphere and equipment necessary for their own continuing training. Countries such as India and Pakistan have established 'extension centres' in their training colleges to provide systematic refresher courses for practising teachers.

The mass media (radio and television), correspondence courses and programmed instruction are all new ways in which the most inaccessible areas can benefit from the work and influence of the most competent teachers. Encouraging experiments are being carried out along these lines in Singapore and the Ivory Coast (television) and India and Indonesia (correspondence courses).

Continuous training also means that the teacher should be equipped with the necessary teaching aids, without which he is badly handicapped. At all levels there is a severe shortage of simple books, reviews and laboratory equipment designed for the country in question and not imported. Unfortunately, as Unesco's Regional Office for Education in Asia notes—and the comment is valid for Africa and Latin America too:

> The supporting services to rural schools (textbooks, instructional materials, audio-visual aids, school libraries) are, on the whole, far from adequate, which is reflected in the proportion of teacher/non-teacher expenditure in per-unit cost—the teacher's salary accounting for 90–95 per cent of per-unit cost. Textbooks even at the primary level tend to be prepared uniformly, and in the absence of other instructional materials, the teacher has little guidance for adapting the text to the local environment. Where the teachers' teaching skills are limited, the textbook along with the school library is the oldest, and still the most effective, form of self-instructional device, particularly for children of more-than-average ability.[1]

1. *Bulletin of the Unesco Regional Office for Education in Asia* (Bangkok), September 1970, p. 38; number devoted to 'Education in Rural Areas in the Asian Region'.

Planning

Planning is an essential instrument of development, translating systematically in clear terms the close links which must be established between objectives on the one hand and means and resources on the other.

Bearing in mind the government's priorities and options, the planner must submit to the politicians a series of choices, indicating the financial, social and economic consequences of each. He has before him an educational system already in existence with its faults and its virtues, in a given socio-economic context which he must of necessity take into account. He may consider his efforts to have been worth while if his plan results in progress by comparison with the previous system.

The art of the possible

Formulation of the plan presupposes a thorough knowledge of the existing system and of its development potentialities. Such knowledge calls for stock-taking of the financial, economic, demographic, sociological, administrative and pedagogical factors.

Not only must an effort be made to record the population's aspirations, in order to seek to satisfy them as far as possible; those concerned must be actively enlisted in the analysis of problems, in the search for solutions and in the drawing up, execution and evaluation of programmes. Such participation, involving the people's co-operation, must also entail their shouldering a large share of responsibility. This is not the least of the problems. For while it takes time to carry projects out and to consolidate them, the local population often wants immediate results. How can they be persuaded that sacrifices are necessary for the good of future generations, particularly in societies where age brings power and respect and where worship of one's ancestors is more important than the care of the young? Moreover, the population at large will not agree to make sacrifices unless the authorities themselves set the example.

Planning must try to avoid the pitfall of a technocratic approach: it is less a technology than the art of the possible. It requires the collaboration of educationists, demographers, economists, sociologists and psychologists so that the objectives can be clearly specified, together with the exact mode of execution, the timing and the conditions for success.

Some of the most formidable obstacles to implementation of these ideas and of the numerous projects being carried out on these lines are the shortage of competent staff in the central and regional education departments, the need for an innovatory approach on the part of the authorities, the excessive centralization

of the administrative structures and the dilatoriness, hesitation and reversals in the decision-making process.

In many countries there is a need for strong and continuous leadership from above, which calls for two parallel and complementary series of measures: (a) to make those responsible aware of the importance of radical renewal, and to act quickly on expressed intentions to bring about changes and innovations; (b) to strengthen leadership and administration for development, to incorporate mechanisms for change in decision-making and executive structures, to decentralize and to open the bureaucratic system to human needs and problems. In fact the danger of bureaucracy is always with us.

Planning basic education

The problem of reconciling the objectives of democratization—equal chances of access and promotion for all, both boys and girls, in rural areas as in towns—with the objectives of economic growth is a crucial one. Owing to the poverty of rural areas and the dispersal of the rural population, investment in such areas is generally less profitable than in urban areas. On the other hand, too great a disparity would serve to accentuate social or ethnic tensions, thus jeopardizing national unity and political stability.

The starting-point for all planning should be to provide basic education for all, regardless of age or sex. This should not be taken to mean a specified number of years of schooling but rather a specified level of knowledge and aptitudes, an awareness of social realities and a specific level of ability in the individual to make use of the manifold sources of knowledge offered by society. This level would not be the same for a child as for an adult. Nor would it be static; it would rise as the country becomes more 'developed'.

To provide basic education for all means supplying the necessary teachers, premises and equipment and also combating wastage. The child should not find after two years schooling, as happens only too frequently at the moment, that there is no teacher available and no class for him to attend—that for reasons outside his control, due to shortcomings in the system, he is unable to continue his education.

Planning for basic education must include estimates of: (a) the number to be educated; (b) the number of teachers required (together with arrangements for their training, recruitment and posting); (c) premises and equipment; (d) the resources necessary to finance investment and running costs.

Provision must also be made for the best pupils to continue their education and complete any course they have begun.

In areas inhabited by nomadic tribes, mobile schools should be established so that the school can move with the tribe. If such schools have audio-visual equipment (slides, films), they can organize meetings for both adults and children to publicize ideas of progress in science, technology, health and education and thus help to change attitudes and behaviour. This formula has been successful in several countries (for example Afghanistan).

There must be two-way links between the different levels of education so that they can give each other mutual support. The Indian Education Commission, for example, has drawn up a plan for 'school complexes' whereby ten to twenty primary schools and three to four middle schools fo[illegible] a complex around one

secondary school. The work of the 'complex' is planned by a committee consisting of all the head-teachers and chaired by the head of the secondary school. This system has many advantages: it brings the small schools out of their present isolation, provides their teachers with help, guidance and training, puts the equipment of the secondary school at their disposal, encourages innovation and changes in curricula, methods and evaluation of the learning process, all of which should lead to an improvement in the quality of the education provided.

Training and employment programmes should be set up in conjunction with regional development programmes for those not continuing their studies, whether they intend to work for wages or independently. Since the aim of education is to stimulate young people's creative potential, they should, with the help of the State where necessary, be able to find work for themselves rather than waiting for it to be supplied by the government.

Finally, since rural development is of necessity a campaign on all fronts simultaneously, educational measures must be combined with measures to improve sanitation, diet and economic and social conditions. Arrangements must therefore also be made to train inhabitants of the region, where possible, to promote development in these different spheres.

Experimental pilot projects

Innovation sometimes arouses strong opposition, as well as occasioning considerable expense, and it may therefore be advisable to launch pilot projects on a small scale in one or more areas and to evaluate them carefully from all points of view, assessing their costs and advantages, both quantitative and qualitative. These pilot projects should make it possible to evolve suitable programmes, techniques and methods. Given the limited scope of each project any mistakes are easily rectified and the expense incurred is small. On the other hand, the methodology which emerges from such projects is relatively easy to apply elsewhere.

In any case a reform on anything like a large scale cannot be improvised. Time is needed and careful preparatory work, particularly from the psychological point of view.

This experimental stage also affords an opportunity for defining the detailed procedures for the progressive replacement of the existing educational system by a new system.

Two points must be made clear: (a) experiments should not be conducted in an artificial, laboratory atsmophere, entailing too much expenditure to enable sound conclusions to be drawn for application to a project covering the whole country; (b) nor should they be conducted in large areas where conditions are in any way abnormal—for example development possibilities (quality of the soil, mineral resources, easy communications) which do not exist elsewhere, or, conversely, serious economic and social backwardness. In such extreme cases either the experiment will be a failure or it will not be transferable.

Good pilot projects are experimental projects carried out in close to average conditions, in areas and with people who are representative (in the statistical sense of the word), and using ordinary resources, so that the results obtained may be transferable. Basically the need is for new ideas and new men rather than for extraordinary resources.

The link between education and economics

If educational planning is to be effective it must be closely linked with economic planning. These links have several aspects:

First, secondary schools, higher educational establishments and research institutes must be located in areas ecologically suited to the subjects and problems which they study. Thus (for the convenience of its teachers and students) a faculty of agriculture will be located in an agricultural area and not in an industrial capital.

Conversely, economic and social programmes require educational support if they are to be successful. In Peru several projects for agrarian reform have run into difficulties because they were not backed up by education and training programmes, with the result that the government has now given priority to a project linking education for rural development with agrarian reform in the country's southern Sierra. In the same way the Green Revolution implies a change in systems of cultivation and calls for new methods of pre- and in-service training for technicians, reform of the agricultural extension system and much more work among the farmers themselves.

All this presupposes mutual consultation between the representatives of the various ministries concerned with training in order to harmonize programmes, changing enrolment patterns and the siting of establishments, and to define the necessary areas of interdependence; in particular, this process points to the need to tackle problems relating to the use of the national territory which entail close co-operation between the national and regional development authorities.

The selection of the site for a pilot farm, an agricultural training centre or teachers' training college, a training centre for rural craftsmen, a slaughter-house or a small packing plant must be the subject of prior consultation between the various development authorities and the educational planning authorities.

Second, manpower requirements must be estimated and the question of the optimum use of manpower considered.

Such estimates are usually made by means of numerical coefficients—farming households or area cultivated per agricultural extension worker,[1] staffing pyramid (number of extension workers per technician, number of technicians per graduate), etc.—bearing in mind methods of cultivation and population density. One of the techniques employed is international comparison, a less-developed country taking as a model a more developed country with the same economic and social framework.

This does not apply only to agricultural personnel but also to all those who play a part in rural development: doctors, nurses, midwives, craftsmen and technicians working in light industry, without of course forgetting teachers.

If these needs are to be met, the requisite number of students must be encouraged to take up these courses of training and present staff must be given refresher courses and further training. Educational and vocational guidance is an essential instrument of planning. Teachers must be given a grounding in psychology and economics in order to provide such guidance, but that is not enough. There must also be a system of incentives, both ideological (service to the community) and

1. Thus in 1971 the number of farming families per agricultural extension worker was 839 in Zambia, 2,176 in Senegal, 8,436 in Mali and 11,458 in Uganda (FAO, *The State of Food and Agriculture*, p. 157, Rome, 1972).

material (scholarships, etc.). The salary scale is also an important factor. If the basic salary of diploma-holders is forty times the national average (as it is in Somalia), students are encouraged to stay at school until they obtain a diploma.

The recruitment and allocation of the necessary staff must also be the object of planning. It is a fact that in a great number of countries the least well-qualified teachers are sent to rural areas and the best posted to towns. This policy does not contribute to the development of rural areas. On the contrary, as we have already said, if the objective is the development of rural areas, the most competent and most highly motivated teachers should be attracted to them by bonuses, higher salaries and possibilities of promotion to all posts, including posts in the administration.

Finally, efficient planning requires adequate research. Until now, although there have been numerous experiments in education for rural development, there has been little objective evaluation. Research is essential if we are to learn from experience, from our successes and, even more, from our failures. Otherwise we would be forever repeating the same mistakes. Research must therefore be carried out into all aspects of education, both quantitative and qualitative, including the various aspects we have been considering in regard to its relationship with the economy and society.

Financing

The problem facing developing countries is how to renew their education systems using their own limited resources. It is true that in many cases existing resources could be better allocated and administered: in many cases they are mis-spent for various reasons, not the least of which is indiscriminate imitation of external models. The vast scale of educational wastage in itself constitutes considerable dissipation of resources.

Decentralization would seem to us to encourage efficiency as well as democratization. To the extent that the rural community feels that it is managing its own affairs in the interests of the majority, its reserves of energy will be released, and it will become eager and resolved to bring about changes. The rural population's considerable reserves of strength and intelligence are underestimated. If country people often seem to resist progress, this is because existing socio-economic structures do not enable them to benefit from it. Once appropriate alterations are made to these structures, the energies of the rural population will be given a free rein.

These energies must be deployed in the sector of education as well as in other sectors. Each community would have its own school, and would be free to decide on curricula and methods in accordance with its needs, and to finance and administer the school in accordance with its own best interests. The State would only be needed to help the poorest, in order to ensure that the quality of education is maintained at the same level throughout the country and in order not to create disparities between urban and rural areas: it could supply teachers or pay them, or pay for equipment, or offer scholarships to children from poorer families; for in countries where school fees are high, rising with the grade, children often stop attending school because their family is unable to bear the cost.

Where private education receives State subsidies, these should not (as in many English-speaking countries in Africa) be based only on the number of enrolments, as this encourages the schools to employ poorly paid and badly

qualified teachers. They should also be based on the quality of the education given and on the teachers' qualifications.

If the local community finances basic education wholly or in part, State funds could be used to finance research into curricula and methods, the production of didactic and heuristic material, the planning of school buildings, teachers' training and further training, the use in the country as a whole of the methods and techniques of mass communication, etc.

It might perhaps be of interest to quote some examples of self-financing.

In Rwanda, pilot primary schools in rural areas each have an experimental garden divided into three plots, the first of which is used to grow crops in the traditional way, the second to use improved methods, sowing in straight lines and using organic manure, and the third for modern crop-growing with fertilizers. In one of these schools, with only a small patch, 8 and 9-year-old pupils harvested and sold 120 dollars' worth of potatoes which gave each pupil a 'surplus' allowance for equipment of one dollar each (three classes of forty pupils), i.e. an equipment allowance six times that of traditional schools.[1]

In India the population of the state of Madras voluntarily contributed several million rupees' worth of land, buildings, equipment, supplies, sanitation, water supplies and midday meals. The *Panch Shila* (five points) for minimum local participation are: (a) maintenance and annual repairs to the school buildings; (b) annual resurfacing of black-boards; (c) drainage; (d) supply of drinking water; (e) installation and running of a school library.

Even the poorest people are glad to make their humble contribution to schools which their children attend.

The principle of self-reliance has been carried furthest in China, since the cultural revolution.

Country schools there are administered by the rural population who train the children in productive work for both pedagogical and ideological reasons and to enable them to finance themselves at least in part, thus making it possible to provide education free of charge.

We refer to the experience of a rural primary school in Liao Ning:

> Were there no classrooms? Then the living room of a private home, the barn of the production brigade, the space near the blacksmith's forge, the shelter of the trees near the river, were used as classrooms. Were there neither tables nor benches? Small boxes, flower pots, stools, broken feeding troughs, or old tables were made to serve the purpose.... Participation in productive work constitutes a basic discipline for pupils. In view of which, all kinds of work whereby school costs can be reduced—gathering of medicinal herbs, wild almonds, and firewood—have long been employed. In four years, more than thirty tons of wood have been gathered which, in addition to solving the heating problem, made it possible to assist the production brigades, and also to earn above 200 yuan, which met the various expenses of the school, including equipment. In four years of management, not a penny has been requested from the students.[2]

At the secondary level the schools have fields which produce rice, cassava or ground-nuts; some have concluded service contracts with the State, for example, to tend young trees in a forestry plantation.

1. This would have been a perfect example if the adults, particularly the parents, had been associated with the pedagogical experiment, and had given the children a 'helping hand'.
2. Quoted by L. Vandermeersch, *Educational Reform (People's Republic of China)*, p. 13, Paris, Unesco, 1971 (International Commission on the Development of Education, Series C, No. 13).

Need it be emphasized that decentralization and self-financing encourage the democratization of education? They make it possible to increase the number of schools, putting them within reach of country children.

The sacrosanct regulations were abrogated by allowing pupils with family responsibilities to bring their little brother or sister with them to school, leave somewhat earlier in the evening and attend school according to the season. No age limit has been set for school entrance.[1]

Democratization has been speeded up at the secondary level:

In the great brigade of Nanxi from 1950 to 1957 only 62 pupils in this brigade finished upper primary school studies and only 13 who entered secondary school, among whom there were in all but five poor peasant children, graduated. As school fees amounted on the whole to some 160 yuan a year per pupil, more than $\frac{2}{3}$ of a worker's yearly income, they were too high for poor peasants to pay them; and if some of their children managed to enter school, they were obliged to drop out before finishing their studies. At the same time the poor peasants realized that after their children had gone to the city, their outlook and manner of life changed: upon returning home for their vacation, they were afraid of getting dirty or tired; they had become fastidious about their food and clothing, which greatly upset the poor peasants ...[2]

Development relies on the energy of the community and its collective dynamism to provide its initiative and driving force.

International co-operation

To be effective, international co-operation, both bilateral and multilateral, must be made an integral part of national planning. In as far as the nature, the form and the procedures of this assistance are not easily foreseen, this is no easy matter. Poor countries generally cite this uncertainty as a reason for merely preparing a programme of action instead of a genuine plan for development or to emphasize that national planning cannot (*a posteriori*) be based on the vagaries of hypothetical resources or investments from abroad.

One temptation to which poor countries often yield is to accept certain offers of aid which not only are not always in conformity with basic policy and with established orders of priority but which subsequently entail recurring expenditure such as to represent a heavy charge on the national budget. Such unsuitable forms of aid may, paradoxically, be directed to sectors of vital importance such as health (hospitals), education (schools), etc.

However short they may be of qualified staff, developing countries must make an effort to integrate all their resources, including external aid, with their planning and should for this purpose establish a department responsible for centralizing the proposals of the different branches of the administration, analysing them and suggesting an order of priority. The international co-operation programmes, for their part, should take stock of the realities of the local situation, from the point of view of development programmes, employment problems, finance and technical potential, and adjust their activities accordingly. Well co-ordinated aid should make it possible to avoid duplication, to harmonize aid

1. Vandermeersch, op cit., p. 13.
2. ibid., p. 12.

programmes, together with their conditions and procedures, and to reduce the number of unrelated and sometimes contradictory projects.

Effective aid is aid which paves the way for its withdrawal: as a country's potential is developed, so it should progressively be able to manage without aid. The following are suggestions for application of this criterion:

First, external aid should seek alternatives to systems which have proved impracticable and avoid continuing to promote sporadic reforms which tend to perpetuate such systems.

As the International Commission on the Development of Education said:

> [International initiative] can no longer be confined to areas in which it has so long chosen to operate, such as qualitative improvements, teacher training, adult-literacy campaigns, etc. It must gradually extend its scope to cover, above all, the search for alternatives to existing institutions, the examination of new pedagogic experiments, joint action for innovation.[1]

Education integrated with development in rural areas is one such sphere of action. For instance, international aid could take the form of experimental pilot projects, as defined above, which the country receiving such aid would be able to maintain with its own resources once the period of aid has been completed. For example education by television should not be introduced if the country is obviously incapable of operating it or taking it over.

Second, a corollary of this idea is that aid should be used for productive investment rather than on consumer goods, for nothing remains to be seen of the latter once they have been 'consumed' whereas the former can be used to produce more goods, with consequent spin-off in other sectors. Instead of supplying books and paper, for example, it would be better to help the country to whom aid is given to make its own paper, set up printing presses and publish books itself. Each year African countries spend millions of dollars buying and importing textbooks produced in other continents, when with a little effort they could produce such textbooks themselves.

Third, investment can also usefully be made in training, and technical assistance and aid programme personnel should direct their efforts more to training nationals than to running the projects themselves. Greater understanding of development problems and greater sympathy (in the fullest meaning of the word) for the countries receiving the aid would be most useful.

Fourth, research must be related to the development of the country concerned. The object of research should be chosen by the country itself, which should also put its own staff and resources into the programme in order to be able to continue it once the aid from outside comes to an end.

Lastly, aid programmes should last long enough to lay solid foundations and should not involve too much expense for the country receiving the aid. Some bilateral aid agreements call for reciprocal contributions (lump-sum payments, accommodation, transport, etc.) which can be burdensome, and high rates of interest are attached to certain loans. The rate of interest applied by the World Bank (7 per cent) can be more easily justified in industry than in education where investment does not bear fruit immediately. In any case it would be a great help if the period for repayment were extended (to thirty or forty years instead of ten or fifteen). The International Development Association (IDA), which only

1. Edgar Faure *et al.*, op. cit.

charges a commission of 0.75 per cent on its loans, would be able to help a greater number of countries if its capital were increased.

In general, loans and gifts should be used more to promote innovation in education.

If in the national accounting system, building is considered as investment, this concept is more applicable to industry than to education: for in this sector, real 'investment' lies in improving teaching equipment and methods, training teachers and seeking new formulas. Although the building is essential, it is only indirectly involved in the educational process. It may even have a negative effect, if norms are applied which resemble those used in industrial countries and are consequently not suitable for the country receiving the aid. This form of aid may well impose unsuitable cultural models.

There should be more co-operation between developing countries, particularly in the form of exchanges of students, research workers and specialists. Direct communication of experiments carried out in a similar environment and of their results would be to the benefit of all concerned.

In short, international co-operation should aim more at developing production potential and at encouraging innovation and less at reproducing outmoded systems. But however substantial the aid given, it can never do more than bridge a gap or set the ball rolling; only the population itself, by its own efforts and with the help and understanding of the governments concerned, can lay a solid and durable basis for growth.

Conclusion

Rural development cannot be left to small groups of technicians, however competent they may be. It must involve the constant participation of all the vital forces in an area by drawing them into a continuous dialogue. The plan provides a framework within which all the nation's activities can blend harmoniously. It must be a collective effort, combining the ideas and energies of the State and the private sector, of country folk and townspeople alike.

The task of development as a whole can therefore be placed under the dual signs of co-ordination, which is essential for the success of any given project, and empiricism which, contrary to excessive dogmatism, makes due allowance for the great diversity of possible solutions and situations.

Rural development implies a series of investments in technology, health, education and culture. But this integration means nothing unless the whole of society is animated by a dynamic spirit such as to generate change.

Development is not achieved by superimposing one form of civilization or technology or one economic or educational system on top of another. It is a long drawn-out process which begins in the minds of men: to change the attitude of a countryman and his community is as important a step forward as the acquisition of new knowledge or possession of the necessary resources and means.

Victories easily won in the minds of children may soon be neutralized by the scepticism, if not the hostility, of the family and by group pressures. Thus inducement of a state of mind characterized by critical awareness and faith in scientific progress precedes and determines the success or otherwise of education proper. Even if each member of a community does not or cannot have immediate access to some form of education, much has been achieved if he understands its basic objective.

To opt for development is to accept change. If the community is inspired by a desire for change; it will have the necessary energy, determination and commitment and will take stock of the means, resources and skills required. In such an undertaking the individual, whatever his degree of conviction, comprehension and aptitude for success, should be able to count on the support of the majority of his group and be in a position to influence it.

The rural community has tremendous hidden reserves of energy, strength and intelligence. If the whole population of certain developed countries, a large proportion of which was until recently illiterate, is now playing its part in the development of these countries, this is mainly because this energy has been released and put to use. The view is therefore untenable that all rural communities are invariably resistant to change, progress and development. The sound common sense of the countryman, the wisdom of generations which has been handed down to him and his instinct for self-preservation all incline him to put his trust

mainly in traditional methods, however mediocre the results. He is, conversely, suspicious of innovation which, apart from calling for extra effort on his part, requires money that he does not possess, and which, in any case, he cannot use confidently owing to his lack of education. He must therefore be convinced of the advantages of the new approach to education, the effectiveness of which will in fact depend on his participation, understanding and personal support and which should increase his ability to promote development and to adapt himself to the resulting transformation.

The intersectoral nature of development and the multidisciplinary character of education highlight the roles to be played by all the other sectors, whether economic, social or cultural, in the process of winning men's minds. Whereas teachers had to be made aware of the nature and mechanisms of development, other sectors, administrative and technical, economic and social, political and financial, must be brought to recognize the essential role of education and their share of responsibility in this sphere.

Graduates in scientific or technical subjects, technicians, writers, journalists, administrators, doctors, nurses and craftsmen should all make partial repayment of the best that their educational system gave them, by themselves assuming some responsibility for teaching. Members of corporate bodies, organizations, firms and companies, professional organizations and trade unions, religious and lay bodies, should also make their individual contribution to the process of education, which would then involve each and every member of society. In this way a decisive step would be taken in the direction of 'lifelong education'.

Bibliography

The following bibliography is presented in chronological order—the most recent publications given first.

1973

INTERNATIONAL COUNCIL FOR EDUCATIONAL DEVELOPMENT. *Non-formal education for rural development. strengthening learning opportunities for children and youth.* New York, N.Y., Unicef.

Reformes agraires à travers le monde. *Le monde diplomatique*, no. 229, April.

UNESCO. *Practical guide to functional literacy.* Paris, Unesco.

WALSHE, Philip. *Experimental integrated project on education for rural development.* Namutamba (Uganda), Unesco.

1972

BREMBECK, Cole S.; HOVEY, Richard L. *Educational programs in rural areas.* Paris, Unesco, August. (Doc. SC/WS/507.)

COVARRUBIAS, A. *Educacion rural dentro del Marco del proyecto de Modernizacion de la vida rural en los Andes, Ecuador.* Unesco.

COVERDALE, G. M. *Education and rural development.* Sydney, Macquarie University.

FAURE, Edgar *et al. Learning to be.* Paris, Unesco; London, Harrap.

FOOD AND AGRICULTURE ORGANIZATION. *Education and training for development.* Rome, FAO

——. *The situation of food and agriculture.* Rome, FAO.

MALASSIS, L. *Education rurale et agricole et développement economique.* Paris, Unesco. (Doc. SC/WS/509).

MANONE, Carl J. (ed.). *The role of teacher education in promoting rural transformation. Proceedings of the Tenth Universities of Eastern Africa Conference on Teacher Education, Nairobi, University of Eastern Africa.* Nairobi, University of Eastern Africa.

NATESH, A. M. *Organisation of literacy broadcasting in Zambia (a manual).* Lusaka.

PAULSTON, Rolland G. *Cuban rural education. a strategy for revolutionary development.* Pittsburgh University.

PERU. *Ley general de educación: de las universidades; del magisterio; de los núcleos educativos comunales; de la educación básica laboral.* Lima.

ROUVEYRAN, Jean-Claude. *La logique des agriculteurs de transition.* Tananarive, Éditions G. P. Maisonneuve et Larose, 1972.

UNESCO. *Third International Conference on Adult Education, Tokyo Final Report.* Paris, Unesco. (Doc. ED/MD/25.)

UNESCO/IBE. Education for rural life. *Educational documentation and information* (Geneva), no. 183, 2nd quarter.

1971

GRIFFITHS, V. L. *The problems of rural education.* Paris, Unesco/IIEP. (Principles of educational planning, no. 7.)

ROUILLE D'ORFEUIL, Henri; SENTILHES, Henri. *Analyse des réformes de l'éducation de base en Afrique noire francophone et a Madagascar en relation avec le développement rural.* (Thèse pour le Doctorat d'économie appliquée, Paris, Université de Paris Dauphine.)

UNESCO. *Agriculture and general education.* Paris, Unesco. (Educational studies and documents no. 2.)

——. *Conference of Ministers of Education and Those Responsible for the Promotion of Science and Technology in Relation to Development in Latin America and the Caribbean, Venezuela. Final Report,* Paris, Unesco. (Doc. ED/MD/22.)

——. Education for rural development in Africa, Unesco-Unicef cooperation in integrated science education. *Bulletin of the Unesco Field Science Office for Africa* (Nairobi), vol. VI, no. 3.

——. *Third Regional Conference of Ministers of Education and those Responsible for Economic Planning in Asia, Singapore. Final report.* Paris, Unesco. (Doc. ED/MD/(20.)

1970

ADISESHIAH, Malcolm S. 'Life-long education'. *International Education Year bulletin,* no. 7. Paris, Unesco.

COMMONWEALTH SECRETARIAT. *Commonwealth Conference on Education in Rural Areas. Report.* London. (Conference held at the University of Ghana.)

DIEUZEIDE, Henri. 'Educational technology and development of education'. *International Education Year bulletin,* no. 8. Paris, Unesco.

ECOSOC *The learning process and the teaching of science and mathematics in developing countries.* New York, N.Y., United Nations.

FAO-UNESCO-ILO. *World Conference on Agricultural Education and Training. Report.* Vol. I, Copenhagen.

GOSSELIN, G. *Développement et tradition dans les sociétés rurales africaines.* Geneva, ILO.

GOUSSAULT, Yves. *Interventions éducatives et animation dans les développements agraires (Afrique et Amérique Latine).* Paris, Presses Universitaires de France.

LÊ THÀNH KHÔI. Éducation et emploi dans le monde rural. *Revue Tiers-Monde,* vol. XI, January-March, p. 85-114. Presses Universitaires de France.

OAS. *La capacitación de recursos humanos para el desarrollo de la comunidad.* Washington, D.C.

PERU. *Reforma de la educación peruana, informe general.* Lima.

PERU/UNESCO. *Proyecto especial integrado sobre la función de la educación en el desarrollo rural.* Lima, Ministerio de la Educación.

PLATT. William J. Education for development. *International Education Year bulletin,* no. 5. Paris, Unesco.

——. *Research for educational planning. Notes on emergent needs.* Paris, Unesco/IIEP.

SPAULDING, Seth. Teacher education—what next? *International Education Year bulletin,* no. 10. Paris, Unesco.

UNESCO. Adaptation of education to the needs of the modern world in rural areas. *International Education Year bulletin.* no. 9. Paris, Unesco.

——. Education in rural areas in the Asian Region. *Bulletin of the Unesco Regional Office for Education in Asia,* vol. V, no. 1. Bangkok.

——. The advancement of women through access to education. *International Education Year bulletin,* no. 3. Paris. Unesco

UNESCO/FORESTA INSTITUTE. *Final report of international working meeting on environmental education in the school curriculum.* Nevada.

1969

GAUDY, M. *Animation rurale.* Paris, La Maison Rustique.

HOUGHTON, Harold; TREGEAR, Peter (eds.). *Community schools in developing countries.* Hamburg, Unesco Institute for Education.

JOLLY, Richard. *Education in Africa: research and action.* Nairobi, East African Publishing House.

——. Planning Education for African Development. Nairobi, East African Publishing House.

Three-phase primary science (Teacher's Handbook). Papua, New Guinea Primary Science Project. Brisbane, Jacaranda Press.

UNITED NATIONS. DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS. *Growth of the world's urban and rural population, 1920-2000.* New York, N.Y., United Nations. (Population studies no. 44.)

UNESCO. Rural education. *Prospects*, no. 2, p. 7-52. Paris, Unesco.

1968

BAIROCH, P. *Evolution 1960-1967 et perspectives à court terme de l'économie du Tiers Monde. Colloque de l'Institut de Vienne pour le Développement et la Coopération.* Klagenfurt.

DEY, S. K. *But, for whom?* Parts I, II and III. New York, N.Y., UNDP.

HUNTER, Guy; DUMONT, René. Rural development. *Manpower aspects of educational planning; problems for the future*, p. 161-208. Paris, Unesco-IIEP.

NYERERE, Julius K. *Ujamaa—Essays on socialism.* Dar es Salaam, Oxford University Press.

UNESCO Rural schools and economic development in Cameroon. *Unesco chronicle*, vol. XIV, no. 4, p. 149-51.

——. *L'enseignement primaire et normal en milieu rural.* Paris, Unesco. (Doc. ED/WS/63.)

——. *An African experiment in radio forums for rural development. Ghana, 1964-65.* Paris. (Reports and papers on mass communication, no. 51.)

——. *Final report of the Working Group for the Pilot Project on Rural Education in Primary Schools (Dakar).* Paris.

——. *Final report of the International Advisory Committee on Agricultural Education and Science.* Paris, Unesco. (Doc. SC/CS/213/11.)

UNESCO/IIEP. *Reform of the rural primary school curriculum in relation to pupils and environmental prospects in a village.* Paris.

1967

ERNY, P. L'enfant dans la tradition africaine. *L'enfant en milieu tropical*, no. 42. Dakar and Paris Institut de Pédiatrie Sociale and Centre International de l'Enfance.

HAGGIS, S. M. *Finding out in science*, no. 1. Cambridge University Press.

HAGGIS, S. M.; HALL, J. B. *Finding out in science*, no. 2. Cambridge University Press.

LÊ THÀNH KHÔI. *L'industrie de l'enseignement.* Paris, Éditions de Minuit.

SHEFFIELD, James R. *Education, employment and rural development.* Nairobi. (Proceedings of a conference held at Kericho (Kenya) in September 1966.)

UNESCO. *Radio and television in the service of education and development in Asia.* Paris, Unesco. (Reports and papers on mass communication, no. 49.)

——. *The rôle of the human factor in the development of the newly independent countries.* Paris, Unesco. (Doc. SHC/5.)

1966

MALASSIS, L. *Economic development and the programming of rural education.* Paris, Unesco.

MIALARET, Gaston *Education nouvelle et monde moderne.* Paris, Presses Universitaires de France.

ORATA, Pedro T. Barrio high schools and colleges. *International review of education*, vol. XII, no. 4, p. 473-82.

UNESCO. *Social research and rural life in Central America, Mexico and the Caribbean region.* Paris, Unesco. (Proceedings of a seminar held at Mexico City in October 1962.)

1965

BOSERUP, Ester. *The conditions of agricultural growth.* London, Allen & Unwin.

UNESCO. *Rural numeo newspapers.* Paris, Unesco. (Reports and papers on mass communication, no. 46.)

——. *Radio broadcasting serves rural development.* Paris, Unesco. (Reports and papers on mass communication, no. 48.)

1964

UNESCO. *Access of girls and women to education in rural areas. A comparative study*. Paris, Unesco. (Educational studies and documents, no. 51.)

1963

DEHEYN, Jean-Jacques. *Agricultural education within the context of primary and secondary instruction*. Paris, Unesco. (Doc. ED/AGRED/6.)

1962

BRUNER, Jerome S. *The process of education*. Cambridge, Mass., Harvard University Press.
DOTTRENS, Robert. *The primary school curriculum*, p. 61-75. Paris, Unesco. (Monographs on education, II)

1958

UNESCO/IBE *Facilities for education in rural areas. International Conference on Public Education, XXIst Session. Geneva.*