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VIEWPOINTS/*CONTROVERSIES*

OPEN FILE

Distance education (I): Key themes

TRENDS AND CASES

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Landmarks

Distance education: a peaceful revolution

While formal education systems at all levels and in all regions of the world struggle in a crisis which Philip Coombs[1] in two far-reaching publications and Unesco[2] have scrupulously analysed, a parallel system is emerging, diversifying and taking a place which positively challenges traditional types of education.

For those who are not impressed by figures and statistics, there are, none the less, some facts which cannot leave one indifferent. Indeed, one may well not be surprised to learn (see the article by Anthony Kaye) that in the USSR: '1,200 distance-teaching institutions, some 1.5 million students take higher education courses' and that in China for the same year 'about 40 per cent of the country's university population . . . were taking courses at a distance.' One cannot help but reflect that if both countries are among the most heavily populated in the world, one is called a developed country and the other is identified as a developing country. At the same time, they are both utilizing distance education and have come to the conclusion that it is useful, if not actually indispensable. Even more, if one agrees to forget the figures and picks out on a map all the countries where some form of distance education is employed, then one notices that practically half the countries in the world, from the smallest to the largest, are involved.

Let us go a bit further. These countries have recourse to distance education for basic education (for adults), secondary, post-secondary and for teacher training, both in order to respond to the demands of the formal system (for example to pass a school-leaving examination or a competitive higher-education examination) or for individual choices of the strictly non-formal type: in short, distance education is available for all ages, needs and tastes.

Let us go even further. The first efforts in distance education were nearly contemporaneous in Europe with the creation of the postal system, in the form of correspondance education. This goes back to the middle of the nineteenth century. Radio education followed a century later in the 1940s, which was then followed by television, by audio and video cassettes, and lately by computer and the integrated use of other means. There, at least, is an approach which was constantly able to take advantage of each new technological conquest (as opposed to the school which was not able to do so) and judiciously employ them. It was able to combine that which appears still impossible in the formal system: to work and learn at the same time; to improve one's knowledge, to

modulate one's effort and rhythm according to a procedure which does not require a face-to-face situation, an imposed schedule or disqualification. In brief, an option based on personal responsibility. And this phenomenon, with its success, may well change the whole educational and training scene. It is a peaceful revolution today; one might wonder whether tomorrow, it will not be one of the major alternatives to the monopoly and specificity of the present formal system, a valuable alternative in both meanings of the term.

Anthony Kaye, a teacher in the prestigious British Open University, could not have been a better choice in identifying the key points and questions to be raised in any project to establish distance education (in the present issue) and in identifying a number of the most remarkable efforts worldwide in this field which will be analysed in the next issue. I extend my sincere appreciation.

As may well be imagined, there is a considerable literature devoted to distance education. Most of our authors had the scientific courtesy to recall that, once again, Unesco was a pioneer in 1975 in commissioning and publishing Open Learning,[3] *followed by many other publications, survey reports and meetings. At the same time, the question of distance education, under various operational aspects adapted to the education systems of Member States, to their economic and cultural contexts and naturally to their needs, received its appropriate place in the successive biennial programmes of the Organization, including the one currently being implemented (1988–1989).*

Thus, in the context of the subprogramme entitled 'Improvement in the Contents and Methods of Education' it is foreseen to provide 'technical support and consultant services . . . to national institutions and to non-governmental organizations for training activities to develop distance teaching systems and programmes'; under another heading, 'Development and Improvement of Higher Education for the Advancement of Society', several activities are foreseen: 'the organization of a training workshop for higher-level distance-education personnel'; a 'technical support . . . for networks of institutions providing higher-level distance education, in particular to develop methods and educational materials and to promote their exchange and to assist in the training of teaching personnel'; for the Asia and Pacific Region: 'technical and financial assistance for the development of the production, at regional level, of educational materials for distance teaching'; for the Europe Region: 'organization and preparation of meetings and studies on themes recommended by the Conferences of Ministers of Education of this region and by the Advisory Committee of the European Centre for Higher Education (CEPES)'; among these themes one finds precisely 'teaching/learning methods, techniques and facilities and use of computers in higher education, including distance education'; for the Arab States Region:

'organization of a consultation and preparation of studies' on themes including distance teaching in higher education.

In this brief reminder, once again, we restricted our comments to those within Prospects' *field of competence, that is to say, within education, excluding what the other sectors of Unesco (science, social sciences, culture and communication) examine, propose and implement in terms of distance education.*

Equality of opportunity, institutionalization of innovation

If one had to define what is common to the articles devoted to experiences in such different countries as Hungary (Báthory and Joó), Mexico (Ornelas) and Belize (Jennings), one might say that it is the difficulty encountered in the implementation of positive innovations, which have been politically *accepted, while avoiding deviation from the fundamental principles of equality of opportunity in terms of access and success.*

For the case of Hungary, according to Báthory and Joó, it is a question of whether the education of the gifted should be 'the special task of a few outstanding schools . . . or whether this is to be achieved by raising the quality and effectiveness of the education system as a whole. The substance of the debate turns on whether the end is to be attained by a concentration or equalization of means. In other words, should we go for an élitist or a democratic solution?'

There are more and more countries, both developed and developing, which have conceived and implemented a policy for the education of talented children and adolescents. In an increasingly competitive world, it is evident that this category of youth, the happy few, constitute a precious capital, an investment in the future that no country should neglect. But should this be done to the detriment of the majority of normal young people and the other category, which is steadily growing, of children that the school system considers inferior to a hypothetical fixed average? To the best of our knowledge, this is a dilemma to which no country has yet found an equitable solution.

Take the case of Mexico. The complexity of education systems, the various types of constraints that characterize them, what they require to function and produce more efficiently, lead to the conclusion that the idea of decentralization, when it is politically decided, drawn up and implemented, should, in theory, cure many ills and make up for much inadequacy. The decision was proclaimed in Mexico at the highest level in 1982. Six years later, Carlos Ornelas describes the various tribulations and distortions which have occurred to this policy which, with the help of bureaucracy and privilege, was not successful in taking root.

Let us turn next to Belize. Here is a small country which has recently become independent with all the formidable problems of transition, of taking charge of its destiny and the setting up of a national policy, particularly in education. It is a purely agricultural country and as such it was normal (and exemplary) that it should focus its education system on this sector without, however, neglecting the others. The REAP programme which Zellynne Jennings describes grew from this logic. With its weaknesses and promises, the programme seems to have succeeded on the whole. But, as in Mexico, should a more positive orientation be jeopardized by a change in government?

Europe of yesterday and today

A note of hope to end. In our 'Profiles of Educators' section we offer the reader the opportunity to get to know one of the great educational and cultural figures of the nineteenth century, Wilhelm von Humboldt. It is rare, for an educator to have as contemporaries and friends, men so representative of their country and Europe as Goethe, Schiller, Fichte, Herder, Schleiermacher, among others. It was the Europe of the French Revolution, the Napoleonic conquests, the fall of the Germanic Holy Roman Empire, the Congress of Vienna with the considerable consequences that such events had, exacerbating nationalisms, sparking off new revolutions and pushing Europe to a sort of self-imposed Balkanization carrying a threat of war—and of actual wars—of particular interests and attempts at particular hegemonies.

Two centuries later, modern Europe is coming to terms with its destiny, which is to become united and complementary. At the moment, it only a concern of the twelve countries of the European Economic Community. They represent a population of some 320 million of which young people are in the majority. In this 'space without frontiers' as of 31 December 1992, ideas, teachers, researchers and youth will circulate institutionally. That is to say, education and training will be determinant. Such programmes as Erasmus (university exchanges) and Comett (university-industry exchanges) are already quite successful.

There is another Europe on the horizon but there is also an itinerary which has taken two centuries to be followed. How much time will it take for the other regions of the globe, which also have an urgent need to unite their efforts, to fix a common future and to attempt to work towards it concretely? With respect to this urgency, young people will certainly have a view in the matter. ■

Z.M.

Notes

1. Philip H. Coombs, *The World Educational Crisis*, New York, Oxford University Press 1968; *The World Crisis in Education: The View from the Eighties*, New York, Oxford University Press, 1985.
2. Edgar Faure et al., *Learning to Be*, Paris/London, Unesco/Harrap, 1972.
3. N. Mackenzie, R. Potsgate and J. Scupham (ed.), *Open Learning: Systems and Problems in Post-secondary Education*, Paris, Unesco, 1975.

VIEWPOINTS

CONTROVERSIES

Education of gifted pupils in Hungary

Zoltán Báthory and András Joó

It is of the utmost importance to Hungarian society that its gifted individuals should be able to develop and deploy fully their talents and creative abilities, for the benefit of both the community and their own self-fulfilment. Nor is it a matter of dispute among the various experts that, because of society's growing expectations of its gifted members, the need for a comprehensive solution of the problems relating to their education has now become urgent.[1] According to one survey in Hungary, between 1980 and 1984, 300 scholarly papers dealing with the subject of high ability, the development and care of gifted pupils, and creativity among students had been published (Felkai, 1983). This testifies to the mounting professional and public interest in the education of the gifted. A consensus exists also in regarding talent as a general manifestation of character, in which not just the intellect but all other aspects of the personality play an integral and interacting part. This view of talent essentially disposes of the earlier one-sided concepts, and provides the educationist with a broader basis for the interpretation of the nature of the giften individual. Nowadays, the concept of marked ability includes not only manifestations of general and exceptional talents (genius), but also special aptitudes and creative talents. Moreover, such a wider interpretation of talent corresponds to the wants of society *vis-à-vis* its gifted members.

Where experts differ is whether the desired improvement in the present conditions of the educational care for gifted students should be brought about by making this the special task of a few outstanding schools (for which many past and more recent examples exist), or

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whether this is to be achieved by raising the quality and effectiveness of the education system as a whole. The substance of the debate thus turns on whether the end is to be attained by a concentration or equalization of the means. In other words, should we go for an élitist or a democratic solution? The Hungarian school system, and especially the country's pre-university grammar-school tradition, as well as the present difficulties of the economy, seem to argue in favour of an élitist answer. On the other hand, our path of social development and the ever-widening involvement of the community in all major issues emphasize the correctness of a democratic choice. It is against this contentious social and economic background that we must seek to find an educational solution which is both lasting and beneficial to future progress. Before examining the matter more closely, though, let us take a brief look at the past.

The educational past

After the turn of the century, radical-bourgeois and socialist critics of society recognized and championed the vital social importance of discovering and nurturing the country's talents. It was thus on the intellectual foundations of the educational reform movement of 1906 that the Hungarian Society for Child Study was established, an organization whose entire lifetime (until 1944) was devoted to the professional problems connected with the selection and nurture of children of high ability. Also founded around the turn of the century, along the lines of the École Normale Supérieure in Paris, was Eötvös College which subsequently was to gain considerable renown.[2] Many leading figures of Hungary's present-day cultural life are alumni of this institution and, by and large, look back nostalgically on its educational work. Ancient scholastic towns with their fine tradition of colleges and grammar schools, such as Pápa, Sárospatak, Tata, Turkeve, were also making a valuable contribution and served as models in the evolution of modern concepts concerning the education of gifted children. At the instigation of progressive intellectuals and popular authors, movements sprang up in the period between the wars with the aim of discovering and educating talented children from poor peasant backgrounds. Despite such progressive initiatives, however, official education policy continued to be primarily concerned with serving the interests of the ruling élite and middle class, compounding their advantages of birth by funding and founding grammar schools of a high educational standard. Gyula Kornis, a typical representative of the official Hungarian educational outlook between

the two wars, formulated his ideas on the nurturing of talent saying: 'It is part and parcel of the natural order of things that excellence should primarily enhance the standing of its own social class.'

After 1945, provision of education for the industrial and peasant population became a matter of urgency. With almost 'revolutionary' speed for those days, a unitary eight-grade school system designed to provide an equal basic education for all (general school) was established. However, although this educational reform, whose underlying political philosophy was undoubtedly democratic, might have laid the foundations of a mass education system, thus becoming a significant basis for the nurture of able pupils by the schools, it failed to address the problem of social inequalities with sufficient vigour. Moreover, neither the idea of social 'voluntarism', which became such a vogue in the 1950s nor the almost complete suppression of psychology and sociology were calculated to promote the development of the general school and the quality of education in general.

With progress at a snail's pace, the solution to the problem of making secondary education truly universal still eludes us, a fact which, among other things, also impairs our efforts to devote proper care to the talented section of the school population.[3] Yet, the numerical strength of secondary education's intake constitutes one of the most important strategic factors for the effective nurture of talent.

Current problems

At present, the discussion of the educational problems associated with special abilities is marked by two features which, between them, are calculated to place the educational establishment in an awkward situation. On the one hand, it might seem significant that most of the questions relating to the education of the gifted were not first raised in the proper official forums. One has the impression that the authorities concerned had only begun to address the matter in response to mounting pressure from the general public. On the other hand, one cannot fail to note and be surprised by the aggressive manner in which the small group of those concerned voiced their demands for the development of an 'élite school'. In reviewing trends over the last two or three years, one is struck by the appearance of an increasing number of highly emotional articles, all pleading for special élite education. The 'addressees', in this case the education authorities, for their part tried to respond by hastily gathering together and slightly updating all the hoary methods to which they had traditionally resorted when dealing with high-ability scholars.

This deplorable reaction merely indicated that, in the face of the intensive 'let's have élite schools' campaign, all the authorities could think of was to 'dust off' the same old methods.

The lessons of the debate, which has now been going on for a number of years, enable us, by penetrating beyond the narrow confines of 'instruction', to analyse the different points of view in conjunction with the wider philosophical aspects and assumptions involved. The examination will, it is hoped, also help to clarify the concepts underlying the various viewpoints, thus furnishing a more balanced picture of both the rational and ideological-emotive dimensions present.

Why should we nurture talent?

With the advent of a new technological era, perceptions of the ever-growing role played by advanced technology in everyday life raise the issue of the nurture of talent to the status of a national programme. In somewhat simplified form the following tentative scenario emerges. The success of the various national economies in the competitive international market-place will come to depend more and more on their achievements in the sphere of advanced technology. The necessary intellectual back-up for this must, therefore, be provided by ways and means capable of positively guaranteeing the supply of expertise (in the form of researchers, planners, managers, etc.) essential for such advanced achievements. Furthermore, Hungary's lack of natural resources means that it must develop products of high technical-intellectual content, if it hopes to end its adverse balance of trade. The odds on this happening seem improved by the fact that since Hungary's intellectual 'workshops' have by tradition always been strongly motivated and targeted on results capable of holding their own in world markets. So the prerequisites for the attainment of this goal, at least as far as self-confidence and aspirations are concerned, seem to be assured.

This train of thought, or rather state of affairs it depicts, creates a favourable setting for ideas advocating (even if 'only in keeping with the economic necessities') a greater recourse to élitism in the education system. (From that premise it might also be argued that education should merely aim for the kind of élitism already taking place in production.)

It is worth pointing out here one aspect which, so it seems to us, forms part of the general atmosphere and emotive backdrop to the above matter. The emergence of a call for 'quality' as the imperative

of the hour, usually finds the more broadly based, lower-age, multi-functional school grades in a vulnerable position. In his excellent study Lukács (1982) pointed out that, going as far back as the middle of the last century, at whatever point we might choose to examine contemporary opinions on culture and education, we invariably find the majority of leading university teachers bemoaning a decline in the quality and standards of education. Without a doubt, Hungary's school system is today more open than ever to the type of criticism, which calls into question certain aspects of academic knowledge and of cultural standards relative to school grades (i.e. general and middle school) where such 'qualities' constitute just a fraction of the proclaimed educational aims. Whereas in the 1960s and 1970s, Hungarian educational policy was concerned with interpreting 'society's demands' primarily in the political, sociological and ethical spheres, for example, the promotion of social mobility, programmes supporting the national effort, helping to create conditions which would be conducive to self-expression and self-fulfilment, etc., in the 1980s education must increasingly concern itself with society's expectations in respect of the safeguarding of productivity and economic growth. In our opinion, the emergent clamour for a radical reform of the educational policy for gifted pupils (the establishment of élite schools), must be seen as an articulation of these social expectations.

The clash of opinion, certain decisions, and the surfacing of ideas advocating change, all contributed significantly to the launching of several research projects. According to their target areas, the analyses fall into two broad categories. The first tends to concentrate on general problems of pedagogy and psychology (for example, manifestation of talent, enhancement of special abilities, elaboration of measurement techniques), while the other group addresses some specific issues of the Hungarian education system, such as questions of organization, management and evaluation in the education of gifted children. In the following sections we shall try to indicate the results to date of this two-pronged research effort and offer some interpretations.

General psychological and pedagogical issues

One of the problems in the education of the gifted—and one often deliberately relegated to the background—is the creation of the agency that will bear the ultimate responsibility for selection. The task of constructing valid tests in support of the selection process is

still being viewed even in more or less well-informed professional educational quarters as something that is 'up to the psychologists to solve'. In the face of such views, some reservations are in order.

Test-based selection creates two fundamental and insoluble problems. First, no generally acceptable criterion exists as to exactly what dimension(s) selection tests should measure. Should it be IQ, creativity, personality traits, special aptitudes, attitudes, and so forth? Or is it to be the sum total of all these factors? Then, what weighting should be given to these various factors in the final selection process? Furthermore, even if it were possible to agree on some testing procedure (based on professional or some other, but in essence always arbitrarily preferred values) we would still be left with doubts about the reliability of the procedure. We would still require to know whether, and if so to what extent, the final decision or ranking at the time of selection was of an enduring character and whether, if repeated at a later date, the same tests performed on the same subjects would yield the same results.

Equally significant are the objections raised from a socio-political point of view. It is easy to discern rigidifying elements appearing in a scheme of education for the gifted that is based on early selection. The chances of ultimately still succeeding in their appropriate field of some of the gifted pupils who had originally failed to be selected, in fact become further reduced, because the pupils attending schools geared to coaching for excellence (even if perhaps not quite so talented) will usually and at the decisive moment have that 'little something extra' to draw upon (we are thinking here primarily of university entrance examinations). This phenomenon, with all its sociological components, unavoidably appears throughout the various grades of educational institutions, and to the extent that élite schools exist, its effects cannot be filtered out even by the manipulation of the criteria of admission. (By may of illustration, it is said that Napoleon's primary concern was the number of intellectually less bright but hard-working officers who had to be continuously promoted, thus causing a falling off in the army's quality.)

As for the tests, it is worth examining not only where they are unreliable, but also what lies virtually beyond their purview. This indispensable, though hardly quantifiable, human potential was acknowledged by the late Imre Fényes, an eminent Hungarian physicist, when he stated in an interview: 'It may sound paradoxical, but in my opinion scientific research work has fundamentally no connection with an aptitude for logical thought, with "cleverness", but rather reflects an ethical quality.'

Comprehensive secondary education and attainment of the gifted

In the framework of IEA's international educational research, the effectiveness of a number of national educational systems has now been under scrutiny since the mid-1960s.[4] The academic attainment levels of a given student population, a dependent variable, are being analysed and then correlated with the school systems' independent variables. As a sideline to an evaluation of science education in nineteen countries, carried out in 1970, the attainment levels of secondary-school leavers were compared at various levels. A country-by-country analysis of the data showed that the attainment of a country's students were to a considerable degree influenced by the percentage of students in the relevant national 'sample' that had attended secondary schools whose graduates were destined for a university of other institute of higher education. The higher the number of pupils attending secondary school, it was found, the more marked the tendency towards a lower average in the levels of attainment.

However, when taking just the top level of the secondary-school pupils examined, say, only 1, 5 or even, as in this case, 9 per cent of the top performers, and again comparing their average attainment country by country, we find that the above relationship is reversed. Thus, the more comprehensive a country's intake for secondary education, the greater will be the tendency of its gifted students to achieve better results (Comber and Keeves, 1973, pp. 173–7). In the case of the thirteen comparably developed IEA countries, the ranking correlation coefficient (Spearman) between size of intake and the national attainment averages amounted to —0.66, whereas that between size of intake and the national attainment averages of top students came to 0.28. (The first value is statistically significant, the second is not.) This inverse relationship between the size of intake for secondary education and the average attainment level, on the one hand, and direct relationship between size of intake and the attainment level of gifted pupils, on the other (even if the relatively few available test data had shown no more than the existence of such a trend in these relationships), are taken as significant evidence by those who consider the extension and democratization of secondary education and the general improvement in the quality of mass education as being the only solid and reliable foundation for the education of our gifted youth.

Now, sports experts have long since realized the close relationship between size of intake and excellence of attainment, and although

élitism has gained the upper hand at times in sport, nevertheless genuine lasting results and a healthy sporting spirit could only spring from the soil of mass participation.

In the light of the psychological reasons alluded to earlier, as well as the correlation between intake and excellence outlined above, we consider as unfounded and extreme those arguments in the debate on the education of gifted children in Hungary today which propose nothing else but the resurrection of the old élite grammar schools and the establishment of new ones.[5] From the arguments put forward, the objective of this exercise is clearly discernible. If even the average levels of attainment are now in decline as a direct consequence of mass education, they lament, then let us at least rescue the gifted children, for only such people of superior ability will be capable of reversing the general trend towards intellectual and moral ruination.

As an alternative to such notions of 'rescue' and of education in general, the school systems of the developed countries, and in particular those taking the Swedish comprehensive school system for their model, point generally and significantly to the benefits as a whole of widespread education. The reason seems obvious: developed countries, having put the state of poverty behind them, find it unnecessary to make special provisions to ensure the self-fulfilment of their gifted citizens. It suffices for them to operate a single, even if only moderately well functioning, school system that is open and accessible to all.

In our view, the present inadequacy of, and conflicts within, Hungarian education of gifted children are primarily due to the fact that, whereas over the last forty years the 'mass' character of public education, ranging from kindergarten to secondary school, has developed, the education system as an organization still bears the marks of earlier inadequacy as well as those of development. Consequently, in every one of its pedagogical functions (including both the education of the handicapped at one end and of the gifted at the other) it has produced a number of functional disorders. Particularly conspicuous in this context are the defects present in the type of school most crucial for the development of talent, that is, shortcomings such as the relatively narrow educational cross-section of the grammar schools and technical colleges responsible for preparing students for higher education, as well as their internal structure, resting as it does on the logic of selection. As regards the principal educational channel leading to a university education (such as the general school, grammar school, university) the following percentages actually attend each level: 100 at the first level, 20–21 at the second and 7–8 go to university. Furthermore, it is well known that the more or less covert structure of both advantaged and disadvantaged

schools merely accentuates the pupils' inequality of opportunity and just as constantly reproduces or replicates the existing stratification of Hungarian society. It might be due to the process of transition from a stage of inadequacy to one of development, and specifically to the manifest malfunctioning of the education system, that today the 'rescuing' of gifted children should have become a more acceptable and promising philosophy than that advocating a differentiated approach to the education and nurture of gifted youngsters. We must therefore now turn our attention to those features of the Hungarian education system which testify to its developed aspects and to those processes which, at least when seen in long-term perspective, point in the direction of progress. Because, if we want to propose as a realistic alternative a differentiated approach to the education of our gifted children, as we mean to do, we must proceed from the present state of the education system as a whole. Obviously, though, we shall only be able to offer a partial analysis.

An indicator of development

It might be useful to cite the findings of the IEA research mentioned above. This study attempted to show the relationships existing between the different countries' degree of economic development, on the one hand, and the effectiveness of their respective school systems, on the other. The indicator of economic development was compiled by the accepted method used in economic analysis; by contrast, the indicator for the effectiveness of school systems was arrived at in a novel and fairly bold way. This indicator was computed from the results of tests in reading and science obtained from 10-year-olds (in our case, fourth- and fifth-grade general-school pupils), and 14-year-olds (in our case, pupils of the eighth grade of general and the first grade of grammar, technical or vocational school). The indicator of the efficiency of the various school systems was therefore based on empirical data (Passow et al., 1976, pp. 19–20, 172–4).

It emerged that, beyond a certain threshold of economic development, no properly demonstrable or interpretable correlation exists between economic development and the measured results of teaching. (At the same time we must point out that as between an already developed and a developing country this correlation is well marked, to the detriment of the developing country concerned.) In the case of Hungary, two particularly striking conclusions can be drawn. First, despite the fact that in respect of development it ranked

bottom in the list of thirteen countries taking part in the experiment (1970 data), Hungarian students scored relatively highly, 10-year-olds ranking ninth in the list, and 14-year-olds coming out on top. Second, the jump in educational attainment, from that of the Hungarian 10-year olds to that of the 14-year-olds, was almost unique. (A somewhat similar trend, though far less marked, was found in two other countries taking part.)

The above results indicate that the effectiveness of Hungarian education is most likely to be higher than what the country's economic performance might suggest. It also would seem to imply that, assuming a significant growth in productivity but a stagnant output in the process of education, we need not fear for quite some time yet the appearance of any marked reversal of this discrepancy between the two. In truth, speaking plainly, it might to some extent be said in reply to the arguments advocating élite education because of its benefit to economic development, that the reserves for economic growth must primarily be sought within the economy itself, in its organization, innovative capacity, etc.

To the extent that the above diagnosis is correct, we feel obliged to recommend to schools and teachers engaged in educating gifted children the adoption of organizational solution and methods which buttress the position of high-quality education at every level of the school system. Unfortunately it cannot be said that the present organization and methods of the teaching/learning process always uniformly point in this direction. Instances of such inconsistency are, for example, the 'streaming' system, affecting 10 per cent of general-school pupils (6–14 years), or the secondary (chiefly grammar) schools' favoured method of nurturing gifted pupils, through the use of educational competition. On the other hand, we must not forget all the less well known and less prevalent procedures and methods which unequivocally aim at fostering the differentiated education of pupils of varied ability and different interests.

Educational competitions

For over two decades now, national educational competitions have been held each year in Hungary for third- and fourth-grade secondary-school pupils. The stakes are high, for success means that the students who are the top ten performers are exempted from the university entrance examination in the subjects in which they gained distinction. Nothing could be more natural therefore than that a covert rivalry should develop over the years between secondary schools regarding their pupils' performance in these annual events.

We have analysed in some detail the results of the nationwide competitions for the decade 1974–83. On the strength of the pupils' ranking, we awarded their teachers/tutors subject by subject a number of points in reverse order of value to the ranking,[6] and then totalled up the results for each school. The higher the number of points scored by individual teachers and secondary schools, the greater the number of successful candidates they had entered in the selected ten-year period. In this way we were able to show that, in 1983, out of the country's 539 secondary schools, 220 schools scored points, although only 25 schools gained a score in excess of 100 points. From the national competition's point of view, therefore, these must be seen as being 'outstandingly successful' secondary schools. We also showed that of these outstandingly successful secondary schools twenty-two are grammar schools (with three technical or mixed-type secondary schools), twenty-three are located in the capital or in larger towns (two in small towns), and that they include all six of the country's pre-university training colleges.

Analysis of the data has led to two tentative conclusions: first, the pupils of certain grammar schools are regularly doing well in the competitions, hence there is a strong presumption that the sociological character of these schools, their staffs' teaching ability, and their material resources, acting in concert, powerfully reinforce each other. When we speak of 'educational élitism', we have largely these schools in mind. Second, some successful teachers, almost independently of their school's general educational standing and sociological character, regularly manage to turn out many pupils of outstanding attainment. This finding partly illustrates the exceptional importance of the humain factor in successful teaching, and partly points the way in which the teaching of gifted children in school might be democratized, as well as a good education be ensured even where general conditions are only average.

Mention must be made here also of the Hungarian students' successful performance at international educational competitions, in particular at the international 'mathematical olympics', since such successes rest largely on the high standards attained in the home contests.

Analysis of the competition results furnishes also, over and above the aforementioned conclusions, a more detailed picture of the nature of the selection process referred to above. The indicators of selection go to show that only 20–21 per cent of those attending general school will manage to go on to grammar school, and that of these only 7–8 per cent will continue their studies at university or university college. However, these indicators do not show that the chances of admission might be subject to extreme variation even within the different types

of school. The results of the educational competitions, on the other hand, being very closely linked to the chances of admission to university, provide a relatively good indication of the inequalities existing between the various grammar schools.

The differences between grammar schools can be measured by having recourse to a Lorenz curve as habitually used in economics.[7] Its essence lies in its ability to determine how in any given attainment (in our case the ranking list of points) the maximum attainable total score is divided between the ranking schools or groups thereof (ranging from, say, 10 per cent of the bottom group to 10 per cent of the top group of schools). The advantage of this method is that it enables a comparison to be made of the quantitative effects of various factors upon the origin of inequalities. For it is easy to see that, given absolute equality, the bottom 10 per cent of the schools will score 10 per cent of the obtainable total points, the next-but-last 20 per cent will score 20 per cent of the points, and so on. This would signify a total absence of inequalities and would be graphically represented by a 45-degree straight line. In actual fact, however, where inequalities are present, the bottom 10 per cent will score considerably less than 10 per cent of the total available marks, so that in the graph of the sample as a whole we shall obtain a curve indicative of the disparities present; this curve will be located below the 'ideal' 45-degree straight line, and the area subtended by it will be proportionate in size to the amount of inequality present. We have made an analysis of the disparities in attainment at the educational competitions using the combined scores obtained in the Hungarian language/history and physics/biology subject groups.

A comparative study of these two groups has brought out what are from the investigation's point of view a number of very significant causal factors in the emergence of inequalities: whereas in the case of the Hungarian language/history group we can assume the pupils' home background exerts a substantial influence, the effects of which upon the grammar schools' attainments will probably simply be ascribed to 'social differences', in the case of the physics/biology group, we can easily visualize a substantial potential for improvement residing in the schools themselves, for example, through the provision of scientific instruments and laboratories, as well as by their effective use.

If we accept this hypothesis, we shall also receive the answer to the comparative study's question whether 'capital investments in schools', such as the provision of essential scientific equipment, tended to increase or diminish inequality in the schools.

Our results reveal that in the case of the physics/biology group's results, based on final rankings, far less pronounced inequalities

appear to exist among the grammar schools than are to be found in either the combined totals or in the score of the Hungarian language/history group. (The percentage values for the inequalities are: Hungarian language/history: 69.1; combined totals of all subjects: 58.4; physics/biology: 47.2.) The results, which are still being further analysed, permit the tentative conclusion that the presumed effect of the schools' vigorous influence (physics/biology) does not accentuate, but on the contrary actually diminishes, the inequalities that might arise from extra-mural, domestic conditions.

Returning for a moment to the issue of the value of competition as a method of education, we should like to point out that although intellectual competitions, as well as contests in the arts and in sport, will probably always be important components of school life, we must never lose sight of the fact that competitiveness can also breed egotism and selfish individualism. Not every contest will necessarily engender co-operation. Moreover many highly talented pupils are of a reticent disposition, shun the limelight, and are decidedly poor competitors. For all these reasons we cannot consider competition to be either the only, or even the principal, method in the education of gifted pupils.

Of all the fundamental principles of education, we consider differentiation to be the cardinal concept. In our opinion it embodies the idea that satisfies every educational interest. Differentiation implies, on the one hand, taking full account of pupils' biological and social differences and taking fully into consideration the discrepancies and inequalities between different types of school and between individual schools. On the other hand, it means striving to create a system of pedagogy, of educational methods, and an environment of teaching aids and equipment which, by the exercise of logic and adaptability (and, if necessary, the introduction of a set of priorities or compensatory measures) are capable of ensuring a constant adjustment to emergent inequalities. Based on this concept of differentiation, we think an extremely flexible system of teaching, capable of suitably adapting itself to inequalities, could be evolved, a system which, while insistent on taking existing differences into realistic consideration, always works in the direction of equality. It is as a result of reflections like these, and not by chance, that the National Pedagogical Institute's conceptual statement should have designated differentiation as being the fundamental tenet in the education of gifted pupils.[8]

We consider that the principal difficulty facing education of gifted children, as indeed of every other pedagogical problem, lies in the magnitude of social and educational inequalities and their complex nature, as well as in the limited resources available. Yet we

do not believe, as we have tried to show, that such limitations entitle us to plump for an élitist answer, which would only tend to multiply the inequalities. That is why we have deemed it essential to show that the differences attributable to the schools' resources (physics/biology scores) are quantitatively smaller than those whose origins must undoubtedly be ascribed to extra-mural, domestic influences (Hungarian language/history). Thus we consider the likely solution to lie with an educational and scholastic regime capable of responding in a differentiated and professionally independent manner to all inequalities. ■

Notes

1. This task was assigned to a working party of the National Pedagogical Institute, Budapest, in 1983. The conceptual statement relating to the education of gifted children appeared in the periodical *Pályaválasztás* [Choice of a Career], June 1984.
2. József Eötvös, the college's eponym, was a distinguished nineteenth-century author and educational reformer; he is considered to be the founding father of Hungary's public education system.
3. On completing the eight-grade general school which aims to provide a general, basic education, pupils can choose to attend one of three secondary schools: grammar school, technical college, vocational training school. The first two of these are four-grade secondary schools leading to a Certificate of Maturity (baccalaureate) examination; the vocational training school has three grades and leads to a Skilled Tradesman Certificate. Approximately 50 per cent in each generation of pupils decide in favour of vocational training school, 20 per cent choose grammat school, and 30 per cent technical college. Grammar school constitutes the principal avenue to higher education.
4. The International Association for the Evaluation of Educational Achievement (IEA) is an international, non-governmental organization whose object is to conduct empirical comparative studies in the educational field. The Hungarian National Pedagogical Institute has been taking part in IEA's research since 1968. In 1970/71 the society carried out a so-called six-subject investigation (comprising reading, science, English and French as foreign languages, literature, and civics), with the National Pedagogical Institute participating in the first three of these subject matters.
5. This idea was forcefully expressed, for instance, in the debate initiated by the periodical *Élet és Irodalom* [Life and Literature], May-September 1984.
6. Ten points were awarded to the first place, nine points to the second, and so on, with one point going to the tenth.
7. For an explanation of this graph see, for example, the comprehensive study by Samuelson (1973).
8. *Pályaválasztás*, op. cit.

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Training for self-instruction: an ongoing experiment

Gordana Zindović Vukadinović

New needs

The differences that exist between education systems and which are conditioned by specific cultural, philosophical and technological characteristics do not mean that the problems confronting schools in the world today are basically different. Apart from the experimental programmes and alternative movements that are occasionally encountered, the generally established process that takes place in schools is one of a transfer of knowledge. This 'giving' and 'receiving' of knowledge between teacher and student has been going on almost unchanged ever since school education began. This process is characterized by the domination and active attitude of the teacher as against the subordination and passivism of the student. In this way carefully selected, firmly structured and 'processed' (ready-made) knowledge reaches the student mainly through the mediation of the teacher. If any other source is included, it is one chosen by the teacher or, in the case of a school textbook, one offering information organized along the same lines as traditional instruction.

If we agree that well-organized knowledge is the valuable result of such instruction (which no one denies anyway) the question is why the pedagogical procedures on which it rests are being so widely criticized and re-examined today.

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We cannot but mention, albeit unwillingly, a factor which is so widely used and abused nowadays: scientific and technological development, with all the repercussions it has for culture, in the broadest sense of the word, and for the quality of life of individuals and social groups. One result of that development and particularly of media-related technological advances is the speed with which information is disseminated to all corners of the globe. The fact that with the help of such technology distance education may be organized and education can thereby be brought to isolated groups or individuals or people who for one reason or another are unable to attend educational institutions speaks eloquently for itself. Because of the absence of direct contact between teacher and student in this case, the methods of transferring and conveying information differ from those applied in the classroom within the same educational process. The experiences of the Open University are well known and constitute an invaluable source of ideas for improving and changing methods of instruction and study in school.

In view of the rate at which new discoveries are being made and information about them spread, and the speed with which they are transformed into finished technological and technical solutions with a direct bearing on everyday life, there is an obvious need for rapid adjustment and continuous study. Cultural adaptation (by which we do not wish to imply rejection or loss of one's own culture as ethnic identity but the assimilation of new cultures and the enriching of one's own) is one of the pre-conditions of contemporary man's survival.

Our present-day culture, which is described as 'technological', 'industrial' or 'mass' culture, either improves or jeopardizes people's lives, depending on how developed is their ability through study to grasp, assimilate, adjust, use and change its 'products'.

Cultural adaptation thus presupposes the possibility of adapting culture for the purpose of preserving and improving the quality of life of each individual.

The concept of lifelong education is the result of, and an answer to, those needs. It is based on the familiar idea that a person's social role changes throughout his or her lifetime. This change is conditioned by psycho-physical development and by social, cultural and economic factors, which also change, affecting the individual's life in different ways at different periods. All this 'necessitates the acquisition of new skills, knowledge and attitudes and relearning or even unlearning what was acquired before'.[1]

The individual must be prepared to acquire new skills, knowledge and attitudes long before that period in his or her life when the capacity for lifelong education should be fully developed. It is

logical, therefore, that preparations should begin from the earliest days of regular schooling.

Considering that regular schooling in the formal education system[2] is based on pedagogical procedures which develop the convergent rather than the divergent cognitive style,[3] the criticisms levelled against it and the problems confronting schools today can be more readily understood. The obvious result is that two equal types of results are expected from education: on the one hand, well-organized, homogeneous and systematized knowledge and, on the other, specific abilities, skills and learning techniques which characterize a personality prepared for change and open to new knowledge.

How to teach students to learn making independent use—according to their own interests, objectives and knowledge and at their own pace—of all kinds of information sources (from human to the most advanced technological ones), how to create a stimulating educational environment and how through self-instruction to reach the stage of lifelong education, these are questions which in one form or another and in various contexts are being repeated all over the world.

The importance of self-instruction is no longer denied by anyone. For if a learning society may be Utopia, to learn throughout one's lifetime is felt as a real need by individuals confronted with all types of present-day challenges.

The repercussions for school practice are twofold: improvement and change in methods for the transfer of knowledge, and the development and introduction of methods of self-instruction.

Directed and self-directed acquisition of knowledge

Various terms are used and different interpretations of concepts encountered in relation to self-instruction. Here we shall dwell only on those that we consider to be most relevant for the matter under consideration: self-instruction, self-directed learning and teacher-directed learning. The distinction between self-instruction and self-directed learning, though it may at first glance appear illogical, has been taken from Unesco's *Glossary of Educational Technology Terms*.[4] Before we express an opinion about it, let us first examine it.

Self-instruction is defined as 'an instructional technique' and self-directed learning as 'a way of learning'. The former, therefore, is a technique 'which involves the use by students of instructional materials (especially programmed instructional materials, learning

packages and audio-tutorial systems) which include stimuli, provision for responses, feedback and testing so that the student can learn either without teacher intervention or with a minimum of teacher guidance'.

In the case of self-directed learning, the student is not given material prepared in advance and ready-made instruments to work with but he 'takes responsibility for his own learning and is involved, to a greater or lesser degree in making decisions about the nature of the learning and way it is carried out: definition of objectives, choice of content and progressions, selection of methods and techniques'.

Such a distinction between self-instruction and self-directed learning points to the conclusion that the latter can be the result of the application of the said 'instructional technique' and that self-directed learning is the result of self-instruction.

The main objection to such a clear distinction is that learning is a component part of any education and every type of instruction, so that the process of self-instruction comprises self-directed learning as an inherent characteristic rather than something that follows as a result.

However, if we accept that everything cited here as determining self-directed learning does after all stand for a higher level of ability and independence, it is not completely wrong to view it as a result.

The above definition of self-instruction does contain certain elements of teacher-directed learning. Regardless of whether or not there is direct contact with the teacher, teachers are behind the prepared materials and by programming, selecting and organizing materials and instruments they direct the user-students.

This type of direction is typical of the Open University, so that it is difficult to tell when the acquisition of knowledge ceases to be teacher-directed and becomes self-directed.

The distinction Malcolm Knowles[5] makes between teacher-directed and self-directed learning, describing the former as 'pedagogical' and the latter as 'andragogical', is among those which clearly indicate the specific traits of the two styles of study. The distinctions are discernible in the prevailing climate, in the planning and identification of needs, the formulation of goals and the preparation of a plan of study, and also in the learning activities themselves and in evaluation. Thus, in the case of teacher-directed learning we have a climate that is 'authority-directed, competitive and judgemental', and in that of self-directed learning one that is 'informal, mutually respectful, consensual, collaborative and supportive'. Accordingly, the teacher-directed style of learning is distinguished

by the domination of the teacher at all the above-mentioned levels: plan preparation, formulation of goals, plan of learning activities, evaluation. The self-directed style, on the other hand, is characterized by 'participative decision-making, mutual assessment, negotiation, learning projects and contracts, inquiry projects, mutual assessment of self-collected evidence'.

Reconciling the two styles

Regardless of whether we adopt the definitions that make a clear distinction between the concepts of self-instruction and self-directed learning or those that put an equation sign between the two, which can be a matter of convention among experts or interested individuals, there can be no confusion between teacher-directed and self-directed acquisition of knowledge. There is also no dispute over the possibility of the two coexisting in both formal and informal education.[6] Some confusion may be caused by the view that self-directed learning is typical of informal education, which of course is not true. The existence of extra-mural and informal education (extra-mural does not mean informal and vice versa) does not necessarily imply self-directed acquisition of knowledge. We may harbour the illusion that it does with respect to coincidental learning or 'picking up knowledge' or, better still, 'picking up' information without any definite objective in mind, without any selection or functional integration. This occurs more or less haphazardly, information being obtained from sources at hand and which impose themselves rather than being chosen with a definite aim in mind. The illusion of self-instruction within the informal system is fostered in particular by the media. Independent learning is frequently equated with self-directed learning, which is also wrong.

We should bear in mind, however, that 'self-directed learning is never casual or incidental but invariably intentional and conscious'[7] and that it depends to a high degree on the internal motivation of the learner.

Independence and flexibility are thus subject to certain rules typical of the school and its directed method, but—and this is the decisive difference—the responsibility for the learner's education is assumed by the learner himself. Accordingly, all the teacher's duties, from setting goals to the evaluation of the progress made, are transferred to him. To reach that stage, the student must first have undergone teacher-directed instruction.

The introduction of self-instruction as an operative strategy in

schools, as an innovation which has its repercussions on school curricula and organization and on the working conditions of the students and teachers, is the goal of a joint project by the institutions of five member countries[8] of the Unesco Network CODIESEE (Co-operation in Research and Development of Educational Innovation in South and South-East Europe). One of its aims is to establish complementarity between the two previously mentioned styles of acquisition of knowledge in the day-to-day practice of schools.

Since the approach to the structuring and study of scientific disciplines, including methods and media, is geared mainly to the acquisition of knowledge in a formally programmed and directed way, the question is how, under those conditions, techniques can be taught and skills and abilities developed which are indispensable for self-directed learning. A change cannot be expected but rather the introduction of innovations which should encourage the development of self-instruction as one of the effects of education on character formation. 'Teaching to learn' is a task of formal education which is of equal significance with well-organized knowledge.

Self-instruction is also viewed here as a factor contributing to a reduction of social differences. The right to education is certainly the first and most important right, but the substance of the democratization of education rests on the opportunity that should be given to every child to learn and progress at his own pace and in accordance with his own ability, regardless of which style of acquisition of knowledge—teacher-directed or self-directed—may be dominant in individual stages of education. The negative effects of social or family background are thus mitigated to a certain degree. Children receiving compulsory education come from different social backgrounds and families with different levels of education. For some, books, video-tapes and computers are part of their everyday environment, whereas for others they are mysterious sources of information whose magical world they can only discover at school if they are given the chance through self-instructional activities. This may be an oversimplified picture of the problem, but its aim is merely to draw attention to the breadth of the social implications of the introduction of self-instruction.

Self-instruction as an innovation: the CODIESEE project[9]

The results of an analysis of the characteristics of compulsory education in the participating countries could be summarized as 'traditional', which also means that these are schools in which teacher-directed learning dominates.

The advantages and value of self-instruction are more or less generally appreciated. The experimental programme is, therefore, expected, in addition to verifying the effectiveness of the methods and techniques introduced for the 10–15 age-group, to highlight results which could be generalized and then transformed into elements of a global strategy for the introduction of self-instruction into compulsory schools.

The topic of the experimental programme, 'Knowing Other Countries' (in this case the CODIESEE countries), has been chosen from the area of international understanding. The reason is twofold: on the one hand there is the motivation effect which learning about other countries can have on students and, on the other, it is a programme that lends itself well to co-operation and exchange of materials. It was also chosen because it is possible to combine contents from compulsory subjects into an interdisciplinary complex comprising the culture, geography and history of the countries involved.

The theoretical basis of the project consists of: (a) characteristics of self-instruction; (b) abilities and skills that need to be developed or improved in students; (c) the pedagogical-methodological aspect of organization of work at school; and (d) evaluation.

The characteristics of self-instruction and self-directed learning have already been discussed at length so there is no need to repeat them. It is important for the reader to know that in this project 'education for self-instruction' implies both the application of appropriate teaching techniques and the self-directed method of learning. In more precise terms, the experimental programme comprises a course in specific techniques and skills of self-instruction conducted by the teacher, and individual and group projects with all the characteristics of self-directed learning, evaluation and self-evaluation.

Among the characteristics of self-instruction that we would like to underline is 'horizontal learning', implying learning through direct contact between the learner and various sources in the school and outside it and the possibilities offered in that respect by the community, the family and the media. Viewed from the standpoint of two parallel systems (the formal and informal) the emphasis is on the cohesive quality of self-instruction.

Abilities and skills are not just wishful thinking. They are already being developed in schools to a greater or lesser extent, either as a result of planning or as the side-effect of various factors affecting character formation. Hence, we are not referring only to their development but to the need for systematic practice and improvement. Efforts in that direction are equally important for the ongoing process of education and as preparation for lifelong education.

Those abilities and skills are: (a) the ability to plan personal and group activities, which includes definition of objectives; (b) the ability to identify, and the skill to use, various sources of information (from verbal and written, through audio-visual to computerized information); (c) the ability to read, watch and listen with different objectives in mind (identifying relevant facts, identifying the main ideas, separating the crucial from the irrelevant, speed-reading and skimming, decoding visual messages, comparing information); (d) skill in recording, paraphrasing, quoting, systematizing data, writing précis and keeping records and message coding (drawing diagrams, tables, graphic presentations, visual messages, etc.); (e) specific abilities corresponding to specific disciplines, science in particular (discrimination, systematization, observation, testing and the like); (f) command of a foreign language (implying a certain vocabulary and simple structures to be followed); (g) the ability for self-evaluation in all stages of work and assessment of results; and (h) problem-solving ability as the combined outcome of the above skills and abilities.

The pedagogical-methodological aspect of the organization of self-instruction embraces curricular and extra-curricular activities, methods, materials and media and an evaluation process. These are also areas that are considered crucial from the standpoint of the introduction of innovations. For this reason, school curricula are analysed with a view to identifying and operationalizing objectives the pursuit of which contributes to the development of the requisite abilities and skills. It is important to analyse them also from the standpoint of integrating curriculum contents to form interdisciplinary entities for the study of natural and social phenomena. We should also like to stress the importance of the stimulating effect exerted by variety in contents and in forms of work with students and by the introduction of group and individual projects.

What we have called curricular and extra-curricular activities include questions which by their significance and scope transcend that framework, namely the status of the process of the acquisition of knowledge and the results achieved and the preparation of teachers. In the case of the former, the process is considered to be the most significant element and factor in the preparations for lifelong edu-

cation and in the latter the emphasis is on the improvement and development of the requisite skills and abilities of teachers. The 'self-learning' teacher is the one who will help students most, so that in the initial and in-service training of teachers, self-instructional methods are considered to be the best for preparing them to accept a style of acquisition of knowledge in which personal authority will not dominate.

The organization of available sources of information in the school in such a way as to make them accessible to all the students, the combination of these sources with those offered by the local environment, and the establishment and development of school media libraries are innovations designed to improve conditions and create an atmosphere conducive to self-instruction. To this should be added the novelties which need to be introduced in school curricula even though they are not of an organizational nature, including study of specific media languages, computer literacy, the operation of information systems and ways of tracking down relevant information.

Although a system for making and evaluating the success and progress of students already exists, a specific system of evaluation and self-evaluation in the process of self-instruction is considered one of the innovations that must be introduced. The methods and instruments for monitoring and evaluating the work and results of students and teachers should provide feedback on the effectiveness of new procedures and enable them to be constantly improved and adjusted. A second group of instruments is designed for self-evaluation: these may be applied independently, in groups, with or without the assistance of teachers, with a view to monitoring progress and the degree to which objectives have been achieved.

The ultimate goal is to develop a stimulating system of evaluation and self-evaluation which students will not see as control or a possible reason for sanctions but as something quite normal and useful for their progress. Finally, the outcome of these effort should be the possibility to establish evaluation and self-evaluation criteria.

Project at work: Yugoslavia's experience

An experimental programme entitled 'Let us Prepare for the Future by Learning about the World around Us' which has been introduced in extra-curricular activities has two principal characteristics. First, it is a specific kind of combination of a self-instruction course conducted by the teacher and self-directed activities by the students within the framework of which the knowledge acquired during that

course is put into practice. The skill and technique of self-directed learning is practised, on contents related to the central object of study, other countries. As regards the other contents, the students participating in the programme are free to choose for themselves, since engaging in free activities of any kind is the personal choice of the students. In our case, it was insisted that the teacher should intervene, but only to encourage the weaker students to join in the activities offered without fear or embarrassment. In this way, groups of some thirty students of fifth grade of elementary school (age 11)[10] were formed in two schools, one rural and one urban, with different levels of performance. After their interests and the level of development of the previously mentioned skills and abilities[11] had been tested, the experimental programme was introduced in the following school year (sixth grade). For a better insight into the approach to the project execution, it should be noted that the teachers opted for it of their own free choice. There were thus two teachers in charge of the programme, seven in one school the teacher of the mother tongue and in the other the media librarian.

An inquiry into the students' interest in the activities designed to help them gain a better knowledge of the CODIESEE countries showed that they were equally interested in reading, listening, watching and collecting material from which, as they indicated, they most wanted to learn about traditional customs, history, language, music, children's films and way of life. As regards collecting, the children preferred, in this initial investigation, to collect coins, badges and postcards.

The project has been designed as an experiment with parallel groups, the control groups being in other schools. It is based, on the one hand, on the above-mentioned jointly adopted theoretical foundations and a corresponding research methodology and, on the other, on the identified level of students' abilities and skills and their interests. Two types of activities have been initiated in the groups formed: a course of instruction in the skills and techniques of self-directed learning, and data collecting and processing in the area of special interest. Possible forms of collecting material for research projects include correspondence, collecting tourist brochures, postcards, press cuttings, extracts from books and souvenirs, the recording and re-recording of programmes, and interviews with parents and other adults who travel.

The self-instruction course, for which the teacher-group-leaders and those teachers whose subjects are relevant to the programme of work (mother tongue, history, geography, art, music) had first to be trained, has been divided into units which are mastered step by step on the basis of instructions prepared in advance and working

materials for each student. This is not programmed instruction but only a system of exercises that have a logical sequence to them. Thanks to those materials, the role of the teacher is reduced to a consultative and organizational one.

The course units consist of exercises or drills such as planning of work, how to use reference books, speed-reading, finding particular facts and figures, identifying the principal idea, establishing the sequence of events, note-taking, précis, quotations, indicating the source, using data files, bibliography and indexes, comparison of data obtained from different sources, classification by significance and informative value, preparation of statements in written and oral form, preparation of projects, etc.

The texts and materials that constitute a component part of students' exercise books refer to the countries whose culture, geography and history are being studied, so that the learning of skills and techniques is not an end in itself but enables useful information of an educational nature to be obtained at the same time. These are important both for our self-instruction programme and for improving knowledge and success in the subjects to which they relate and which are compulsory disciplines of instruction. Knowledge is thus transferred in two ways: on the basis of regular instruction and through the research projects of students in the two groups. As a result of this selection of the contents of exercises, the entire course becomes more interesting for the students.

The students are expected to complete the experimental programme in the eighth grade of elementary school or the last year of their compulsory education, when a final examination is held to ascertain the degree of development of appropriate abilities and command of the skills required for self-directed learning. The final examination for the control groups will help to evaluate the results in the light of the psychological and physical development of the students in that age-group, the effects of general education and finally the effectiveness of the methods and techniques of training for self-instruction, that have been employed.

Some initial observations of the effects of these efforts are worth mentioning. There is a high degree of initial motivation among students resulting in the first place from the subject-matter. This shows that the selection of contents corresponding to the students' interests plays a significant part in winning their support for new initiatives in education. An important contributory factor is that the students enjoy complete freedom with regard to these activities. They are able to dictate the pace at which they will work and master the course offered since it is designed in such a way that each unit can be studied for as long as the group or individual wishes, without

any compulsion. It is thus more like a game engaged in with friends than instruction and study. Another element contributing to the children's motivation is that it gives a chance to introverted and insecure children to assert themselves and gain self-confidence.

The preservation of the students' and teachers' motivation requires constant contact, new initiatives and feedback. The feeling that what they are doing is meaningful and enjoys support in their environment has a stimulating effect on both students and teachers. An improvement, attributable to the group activities, in the methods used and performance attained in regular instruction is another positive indicator that has been observed.

Instead of the 'conclusions' with which an article of this kind might be expected to end, we would prefer to convey a personal impression. We are dealing with a highly delicate pedagogical undertaking which may have far-reaching positive effects but which is also very risky. The potential positive effects have already been discussed at some length. The risk depends on the ability or inability of the educator to strike a proper balance between granting the students freedom and transferring to their shoulders the heavy burden of their own education. A proper balance between teacher-directed learning and self-directed learning is therefore probably the answer.

Notes

1. R. H. Dave, *Lifelong Education and School Curriculum*, Hamburg, Unesco Institute for Education, 1973, 90 pp. (UIE Monographs, 1).
2. The formal education system refers to all types of institutions and forms of education resulting in formal qualifications or diplomas which are required for social promotion (compulsory general education, all types and levels of vocational education entitling graduates to a professional diploma or degree).
3. By 'divergent cognitive style' is meant the search for complex and remote solutions, the launching of new and original ideas, the ability to rid oneself of established, stereotyped methods of dealing with problems, a mind open to new ideas, inventiveness.
4. Unesco, *Glossary of Educational Technology Terms/Glossaire des termes de technologie éducative*, Vol. 1, Paris, Unesco, 1984.
5. Malcolm S. Knowles, *Self-Directed Learning. A Guide for Learners and Teachers*, New York, Cambridge Books, 1975.
6. The term 'informal education' is used to denote education that is or may be acquired outside the formal education system, in the family, in society, in groups or individually via the media, etc. It may produce results as valuable as, if not more valuable than, formal education, given a precise goal, internal motivation and a capacity for self-directed learning.
7. Rodney Skager, *Organizing Schools to Encourage Self-Direction in Learners*, Hamburg, Unesco Institute for Education/Pergamon Press, 1984, 124 pp.
8. Bulgaria, Hungary, Romania, Turkey and Yugoslavia.
9. 'Self-instruction in the Context of Lifelong Education and its Influence on School Curricula, the Organization of School Work and Working Conditions of Students and

Teachers' is the topic of the CODIESEE programme, within the framework of which an experimental programme of self-instruction has been introduced in two compulsory schools in each of the five participating countries. Work on the project started in the school year 1984/85 and the results are expected to be summarized at the end of 1988. The co-operation established with the Unesco Institute for Education in Hamburg has proved to be very important.

10. Eight years of elementary instruction are obligatory in Yugoslavia.

11. The instruments used were those developed by Dr Magdalena Jovanović-Ilić during her research in self-instruction at the Institute of Pedagogical Research (Serbia, Yugoslavia).

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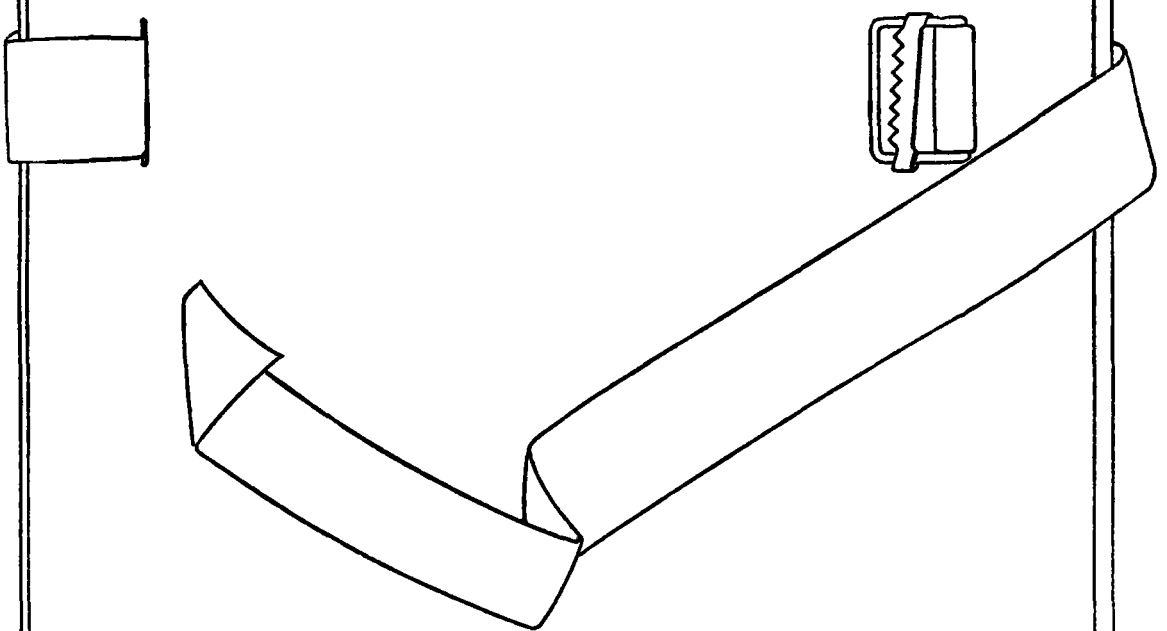
OPEN FILE

Distance education (I): Key themes



Distance education: the state of the art

Anthony Kaye

The International Council for Distance Education has estimated that there are currently around 10 million students taking degree courses at a distance in the world. No organization has attempted to estimate the number of people using distance education methods for other areas and levels of study (such as continuing education, technical education, vocational and professional training), but they must be comparable if not greater. In the USSR alone, where there are about 1,200 distance-teaching institutions, some 1.5 million students take higher education courses at a distance; this figure represents about 30 per cent of all students in institutions of higher learning (Ilyin, 1983). In China, in 1983, about 40 per cent of the country's university population (around 1 million) were taking courses at a distance—a third of these under the aegis of the Radio and Television University of China (RTVU), the remainder with local television universities and university correspondence programmes (Yu Xu, 1986). In the last fifteen years, new institutions or organizations catering exclusively for distance learners have been established in Thailand, Indonesia, Japan, India, Italy, the Netherlands, Spain, Venezuela, Costa Rica, Pakistan, Taiwan, Hong Kong, Sri Lanka, the United Kingdom, Canada, the United States, and several other countries (see, for example, Rumble and Harry, 1982; Harry and Raggatt, 1984).

Education at a distance has a venerable history, some say going back to the correspondence courses in shorthand organized by Isaac Pitman when the first regular postal services were established in Great Britain in 1840. The first real correspondence-course institution was the Toussaint and Langenscheidt Institute, founded in Berlin in 1856 to teach languages (Dieuzeide, 1985). From then on there was a steady growth in the development of correspondence-course provision—often associated with occasional face-to-face teaching sessions—in a wide range of countries, both in the public and private sector. However, until relatively recently, such provision had often been seen as a second-best alternative to conventional education. Even in the Soviet Union, where there was a rapid expansion of part-time study opportunities in the 1950s, the use of correspondence methods, even in conjunction with work experience, was initially seen as a stop-gap measure. In some European countries, correspondence courses offered by some private organizations which seemed more concerned at making a quick profit than in educating their clients, did not help to improve the public image of education at a distance, despite the very high standing of responsible and reputable organizations such as

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Liber Hermods in Sweden (founded in 1898, and at times catering for over 150,000 students a year).

In the last fifteen years or so, however, a number of factors have contributed to a major change in the status of distance education as an appropriate and effective mechanism for the education and training of adults. An important early indicator of this change was probably the publication by Unesco of *Open Learning: Systems and Problems in Post-Secondary Education* (MacKenzie et al., 1975) a book which drew together analyses of many of the early experiences of the use of multi-media methods for distance education, and which helped to redefine the field in much broader terms than the simple provision of correspondence courses. The work on which this book was based began in 1972. A decade later, the International Council for Correspondence Education was renamed the International Council for Distance Education, at its twelfth World Conference in Vancouver. The collection of papers produced for this conference (Daniel et al., 1982), with contributions from 120 authors representing some twenty-five countries, clearly demonstrate the increase in the levels of interest in the field since the publication of *Open Learning*. Another index of activity has been the publication of a number of academic works on distance education as a specific field for disciplinary research and analysis (see, for example, Chang et al., 1983; Cirigliano, 1983; Escotet, 1980; Galvis Panqueva, 1982; Henri and Kaye, 1985; Holmberg, 1981; Kaye and Rumble, 1981; Neil, 1981; Penalver and Escotet, 1981; Sewart et al., 1983; Thorpe and Grugeon, 1987; Young et al., 1980).

The commitment at the level of government and public education institutions to the concept of distance learning can be gauged from several factors. For example, the creation of a number of regional associations to promote collaboration between universities, projects and Ministry of Education departments has been one sign of the official interest in bringing educational opportunities to a wider audience. Such associations include: the Australian and South Pacific External Studies Association (ASPESA), which publishes the journal *Distance Education*; the Asociación Iberoamericana de Educación Superior a Distancia; the Association of European Correspondence Schools; the African Association for Distance Education; and the Asian Association of Open Universities.

In addition, some countries have established national distance-education associations with permanent secretariats. These include Argentina, Brazil, Canada, New Zealand, Norway, Sweden and the United States. National and international aid agencies (such as the United States Agency for International Development (USAID) the Canadian Agency for International Development (CAID), the Overseas Development Association (ODA), the World Bank and Unesco) have demonstrated their commitment to the use of distance-education methods by helping to provide resources for new projects.

It is therefore obvious that distance education is now seen as an effective, appropriate, and acceptable method of extending educational opportunities in a wide range of countries and contexts. However, it is not evident that the concept of distance education has the same meaning everywhere, as there is such a diversity between the various distance-education models adopted in different countries.

The problem of definition

The term 'open learning' has become a catchword or slogan in many circles over the last decade, and it is often suggested that it is the same thing as distance education. The proliferation of 'open universities', most of which teach at a distance, has not helped to clarify the issue. For example, it is evident that distance education systems which make their teaching materials publicly available (through bookshops, and television and radio broadcasts) are more 'open', in the sense of being more visible, than institutions which conduct all their teaching behind the closed doors of classrooms and lecture theatres. However, the term 'open' is often used to refer to institutions (such as the British Open University) which have open

entry policies. Manifestly, this is not a necessary feature of a distance-education system. Of the 837 distance education programmes for which details are available on the United Nations University/International Centre for Distance Learning (UNU/ICDL) data base, only 18 per cent have no entry qualifications. We must conclude that the overwhelming majority of distance-education programmes are definitely not open to all, but tend to adopt the same selection criteria as other educational institutions.

More recently, in some Western countries, the notion of 'open learning' has become associated, on the one hand, with an overtly humanistic and andragogical approach to education, and, on the other hand, with the development and widespread provision of self-instructional learning packages for a whole range of technical, vocational, and professional training purposes (Hodgson et al., 1987). In this sense, distance education becomes a sub-set of open learning (Thorpe and Grugeon, 1987).

In this extended Open File (in the current and the next issue of *Prospects*) we are concentrating on distance education as such, and we shall only use the concept of 'open learning' to the extent that it includes several overlapping characteristics, namely: (a) the use of (openly accessible) media such as print and broadcasts, to provide a major element of the learning resources; (b) the physical separation of course development staff and students, and thus the 'opening up' of educational provision by liberating the learner from the space and time constraints associated with attendance at face-to-face teaching institutions; and (c) an emphasis on distance as a positive element in the development of independence in learning.

However, even after disentangling the concepts of open learning and distance education, there still remains the problem of defining precisely what distance education is. One thing is certain: the enormous diversity of systems, projects, and institutions that teach 'at a distance' makes it very difficult to furnish a definition other than in terms of a contrast to conventional face-to-face, classroom-based instruction. The latter model has remained relatively unchanged over many centuries and throughout many cultures. Distance-education models, however, have developed under many different influences (communications technologies, cultural views on adult education, economic imperatives, and so on) and have taken many different forms. Despite this fact, it is possible to identify a number of features which, taken together, form a basis for a comprehensive working definition of distance education. The analysis presented here is based on that of Keegan (1980), which lists six defining characteristics of distance education.

SEPARATION OF TEACHER AND LEARNER

The majority of teaching and learning activities in distance education are separated in space and time, and the teaching/learning system is fundamentally based on this premise. This does not imply that face-to-face instruction is not used as an element in distance education, or that independent (distant) study does not feature in conventional (that is, classroom-based) education systems. We can visualize distance education and classroom-based education as being two extremes of a continuum (see Fig. 1), in which the proportion of face-to-face, direct teaching elements in the student's learning time varies from around 100 per cent (school-based classroom teaching) to around 0 per cent (traditional correspondence courses with no face-to-face contact). On such a continuum, conventional university education in many countries would occupy a middle position (half the students' time being spent in lectures and seminars, half in private study). Various distance-education models would come at different points along that side of the continuum in which face-to-face activities represent the smaller proportion of student time. Higher distance education in the Soviet system, for example, involves about 30 per cent of student time being spent in face-to-face activities; in contrast, at the British Open University, students on many

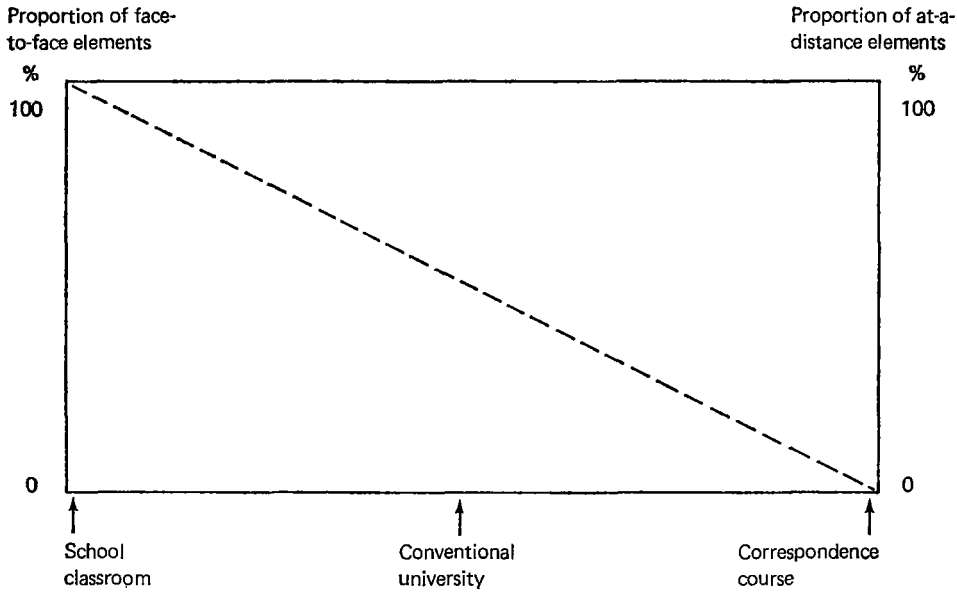

FIG. 1: The proportion of face-to-face and at-a-distance elements in different educational situations (after Cropley and Kahl, 1983).

courses spend only 5–10 per cent of their total study time in this way.

Although Figure 1 presents a continuum in terms of the proportion of student time spent on distance/independent study and in the face-to-face teaching situation, there is a major qualitative difference in educational design between a distance education programme and a classroom-based programme. The former assumes that the primary teaching/learning mode is independent study of specially prepared teaching materials, with face-to-face contact often used for remedial work and trouble-shooting. The latter, in contrast, assumes that face-to-face teaching represents the principal mode of transmission of information and of development of students' understanding.

THE ROLE OF THE INSTITUTION

The role of the institution providing distance-education courses is very different from that of a conventional teaching institution. In the latter, the individual teacher is the primary and most visible point of contact with students, and in many cases the major factor in determining student success or failure. In the distance education situation, it could be said that it is the institution that teaches, as opposed to the individual teacher. The courses are often the result of a collective effort of subject-matter experts, teachers, editors, producers and administrators. The institution generally takes on responsibility for distribution of course materials, for evaluation of students' work, and for provision of local face-to-face contact opportunities. In these respects, the institution has a different 'presence' for the students than it does in a conventional face-to-face teaching situation. Furthermore, it is this institutional presence that distinguishes distance education from purely self-initiated and self-directed study.

It should be noted that the term 'institution' here does not necessarily imply that one single organization takes responsibility for all aspects of a distance education system: these responsibilities may be, and often are, shared between several institutions and organizations working

as a partnership (such as the Open University and the BBC), a consortium (such as the Norsk Fjernundervisning) or a network (British Columbia's Knowledge Network). The important point is that, underpinning the students' overall learning programme, and specific learning activities, there exists a deliberately planned and structured design, delivery, and support system. (For an analysis of the key factors in the planning of such systems, see the article by Armando Villarroel on page 53 of this issue.)

USE OF TECHNICAL MEDIA

Distance teaching is, *par excellence*, mediated teaching. Most of the contextualizing, information-transmitting, and conceptual structuring functions undertaken by live teachers in a classroom or lecture theatre are transferred to various technical media: print, broadcasts, cassettes, data bases, floppy disks and so forth. Face-to-face teaching is reserved for sorting out problems in comprehension, and for group or laboratory work.

In my view, there are three main comments to make about the use of media in distance education. Firstly, the development, production, and dissemination of distance-learning materials requires adequate resources (money, skilled personnel, and technical equipment and materials) if the full potential of the various media used is to be realized. There is a world of difference between a teacher preparing handouts and overheads for classroom use, where problems of comprehension can be dealt with on the spot, and the development of mediated learning materials for people studying in isolation, where there is no help immediately available.

The second, related, point is that the preparation of good-quality self-instructional material for distance learners is difficult and time-consuming. The material needs to be pedagogically sound, in other words, adapted to the situation of the distance learner (see the article by O. S. Dewal on page 61 of this issue) and of high quality, because it is liable to be used by large numbers of students, and may well come to serve as a standard, in a given country, for teaching material in a particular discipline area. The article by A. B. Zahlan (page 73 below), addresses specifically the question of the quality and relevance of distance-education materials. These issues become particularly acute in the case of many developing countries, where the resources necessary for the development of good-quality materials might not be available, and yet materials produced in other countries, which could be made available, are often irrelevant. Finally, it is clear that, although at the limit, people can learn most things from most media (Schramm, 1972) some media are more suited to specific learning objectives than others. Distance-education projects should make the best use they can of the various media available to them, and try to integrate new media into their system as these appear. This has already happened to a large extent with the broadcast media. Few distance-education planners would nowadays design a system around radio or television, but would willingly make use of these media, when available, for specific functions, such as viewing laboratory experiments, listening to poetry or drama, providing regular news and feedback items. After broadcasting, the 'new' computer-dependent electronic media are already beginning to have a significant impact on many distance education projects, both at the production end (e.g. electronic publishing) and the support end (for access to on-line data bases, and to facilitate communication between students and between students and tutors).

However, historically, at the present time, and into the forseeable future, the most commonly used medium in distance education is print. For example, 91 per cent of the distance education programmes listed in the United Nations University's International Centre for Distance Learning data base, use print as a main medium of instruction, and nearly one out of ten programmes rely exclusively on print (see Table 1, page 49).

TWO-WAY COMMUNICATION

A distance-education programme is more than the provision of self-study materials. Two-way communication between individual students and a tutor, mentor or counsellor is an essential part of the learning system. In mass distance-education programmes, tutors are generally acting as intermediaries, and have not themselves been involved in the development of the course materials. For example, the British Open University employs over 5,000 part-time tutors, drawn from conventional universities and colleges, to provide support for students in their study, and central faculty staff, responsible for preparing the course materials, are not required to act as correspondence tutors. At Athabasca University in Canada, on the other hand, central faculty staff tutor their own courses, and part-time external tutors are brought in as needed for the high-population courses. Traditionally, communication between students and tutors has been effected via the postal services, and correspondence tuition is still a key element in the great majority of programmes, although face-to-face contact and telephone tuition also feature widely (Abrioux, 1985). But even in situations where media such as the telephone (or even electronic mail or computer conferencing), are used for student/tutor contact, it is unlikely that these will replace written correspondence tuition. In many distance-education programmes, students' attainment is evaluated on the basis of their written work, and students expect to receive back their work with comments and an appreciation from a tutor or teacher, just as they would if they were studying in a conventional institution.

POSSIBILITY OF GROUP MEETINGS

Interaction and discussion with fellow-learners is an important part of the educational process, and tends to be taken for granted in institutions where the principal learning environments are the classroom, laboratory, lecture theatre and library. In most distance-education programmes, there exist regular or occasional opportunities for group meetings with tutors, teachers, and fellow students, and great care is taken in planning the pedagogical objectives of these meetings, precisely because they are a costly resource which is not taken for granted. (For a discussion of the pedagogical objectives of contact sessions, see the article by O. S. Dewal on page 61 below.) For example, many institutions recommend that these sessions be used explicitly for group discussion, problem-solving, remedial work, and laboratory/practical activities—in other words, for functions which cannot be satisfactorily fulfilled through the mediated course materials. As a corollary, tutors are often asked not to devote too much time to expository talks or lectures, as this teaching function is generally assigned to the course material.

The extent and nature of group meetings in distance-education programmes, and the ways in which they are organized, varies a great deal from one situation to another. Many institutions (such as the Sukhothai Thammathirat Open University, in Thailand, and the British Open University) have established a permanent structure of regional centres throughout the country. Others (like the Chinese RTVU) make use of an existing network of centres at regional levels. Such regional centres are responsible for arranging local tutorial meetings in local study/resource centres, for organizing more extended contact programmes (day schools, weekend schools, or longer residential sessions) and for recruiting and briefing part-time tutors.

AN INDUSTRIALIZED FORM OF EDUCATION

It has been suggested by Peters (1973) that the preparation and distribution of distance-teaching materials, and the organization of distance-education programmes (for example, the running of a regional infrastructure), is akin to an industrialized mode of activity. It is certainly true that the larger distance-teaching

institutions, especially those that make heavy use of a wide range of technical media, have had to adopt a production-line approach to the development, production, storage and distribution of their course materials. The range of skills needed for these processes means that no one individual can be responsible for all stages of development and production of materials, so task specialization, interdepartmental co-ordination, critical path planning, progress chasing and quality control tend to be necessary features of the production aspects of the larger-scale distance-education systems. The factory-production-line analogy is driven home when one visits some distance-teaching universities, and finds that the largest buildings generally contain warehouses, printing presses, workshops, and broadcast studios, rather than the lecture theatres and student residences one finds on other campuses!

The complex nature of distance-education systems, the long lead times necessary for the development of course materials, and the division of labour associated with the specialized nature of many component tasks and with the serving of a mass market, imply that the conventional planning and management processes used in education are inappropriate for distance-education projects, and that specific operational planning and management models must be developed for this sector (Rumble, 1987; Villaroel, 1987).

Some current trends

It is not possible to paint an accurate picture of the current status of distance education on a worldwide basis, for a number of reasons. First, as already mentioned, there is a such a wide range of types and levels of provision, covering all sectors of education, both private and public, from school-level to postgraduate study, and for technical, vocational, and professional training. Hence responsibility for distance-education provision, even in a single country, may be spread over a whole range of different organizations, ministries, and departments. Secondly, the published material available on distance-education provision in many countries is very patchy, and seems to be inversely proportional to the number of students involved (Daniel, 1987). Thus there is very little published information on distance education in the Soviet Union and China, yet the institutions in these two countries probably account for over half of the students studying degree courses at a distance. The published material that is available often tends to concentrate on the newer types of institution, specifically set up for distance teaching, and tends to ignore the provision of traditional correspondence education/external studies that has flourished in many countries, from the United States to the USSR, for many decades.

The few generalizations made below are culled from an examination of the recent literature (which should be interpreted in the light of the caveats mentioned above) and from the information held in the United Nations University/International Centre for Distance Learning (UNU/ICDL) data base. The latter holds up-to-date records of over 800 distance education programmes from around 500 institutions throughout the world (though, unfortunately, institutions in East European countries are sorely under-represented). The UNU/ICDL database classifies institutions into three types:

Those set up exclusively to provide distance education courses (Type A): many of the new 'open universities' are of this type.

Conventional institutions with distance teaching or external study departments (Type B): these dual-mode institutions, especially at university level, are very common in a number of countries (such as Australia, India, China, the United States, Zambia).

Conventional institutions which teach some courses at a distance, but do not have specific distance-teaching departments (Type C).

Information given in Tables 1 and 2 is organized according to these three categories.

NEW INSTITUTIONS

The most remarkable trend over the last few years has been the establishment of new distance-education institutions catering for very large numbers of students in several Asian countries. China's Central Radio and Television University, established in 1979 to support and co-ordinate the teaching in the provincial radio and television universities, now caters for over 600,000 students (a case-study by Zhao Yuhui will appear in the next issue of *Prospects*). Thailand's Sukhothai Thammirat Open University, founded also in 1978, admitted its first students two years later, and is planning on a target population of 500,000 students by 1990 (Srisa-an, 1984). Indonesia's Universitas Terbuka, established in 1984, had over 250,000 applications for its first courses, and was able to enroll 60,000 in its first year of operation (a case-study by Setijadi will appear in the next issue of *Prospects*). The University of the Air in Japan, established in 1985, offers a number of liberal arts programmes, using a mix of television, correspondence materials, and attendance at study centres. The Correspondence University in the Republic of Korea, established in 1982, has around 250,000 students registered in programmes in thirteen different subject areas. In India, the Indira Gandhi National Open University (IGNOU) was created in 1985, with a remit to provide the basis for a national distance-education system, as well as to co-ordinate the activities of the many existing universities which have correspondence teaching departments, as well as those of the new State Open Universities. There is every reason to believe that IGNOU will be catering for very large numbers of students in the future.

The political motivation behind many of these new, massive, projects, is strong, and linked to the need for rapid and cost-effective expansion of educational provision to large numbers of students. The economic rationale which underpins the design of such large-scale distance education systems is analysed in the article by Greville Rumble on page 89 of this issue.

Outside the Asian region, there has been less new activity in the distance-education field. The existing institutions in Australia, New Zealand, and many African countries continue to cater for significant numbers of external students. After a flurry of institution-building in Latin America in the 1970s (for example, the establishment in 1977 of the Universidad Nacional Abierta in Venezuela and Costa Rica's Universidad Nacional de Educación a Distancia), there have been no major new projects, other than a planned Universidad Abierta y a Distancia in Colombia in the early 1980s. In North America, a number of new distance-education institutions were established in the 1970s in Canada (for example, the Télé-Université in Quebec, Athabasca University in Alberta, and the Open Learning Institute in British Columbia); more recently, however, the main thrust of activity has probably been in the expansion of provision for external and correspondence students by existing conventional institutions. This is partly a result of attempts to find new markets in times of economic stringency, and partly because of increased interest in part-time study and retraining on the part of many adults. In the United States, some seventy conventional universities offer courses at a distance to around 150,000 students altogether (Markowitz, 1983). In Europe, after the creation of the British Open University and the Spanish Universidad Nacional de Educación a Distancia in 1970, and the Fernuniversität in the Federal Republic of Germany in 1974, only a few major new institutions have been established recently. These include the Open Universiteit in the Netherlands, which began teaching in 1984, and the Open College in the United Kingdom, which is currently planning a flexible range of distance courses and packages, primarily for vocational training.

THE CLIENTELE FOR DISTANCE EDUCATION

It must be stressed once again that the diversity of distance-education provision means that it is

TABLE 1. The use of media in distance-education programmes

Type of institution[1] (Number of programmes)	Numbers of distance-education programmes using:						
	Print only	Print +other	Radio +other	TV +other	Audio +other	Video +other	Kits +other
A (317)	20	297	80	60	113	64	63
B (291)	26	265	41	35	143	59	47
C (231)	30	201	26	31	110	56	41
Overall percentage (n = 839)	9	91	18	15	44	21	18

1. Type A: institutions set up to teach at a distance.
Type B: conventional institutions with distance-teaching departments.
Type C: conventional institutions with some distance-teaching programmes, but without a special distance-teaching department.

TABLE 2. Facilities for group meetings in distance-education programmes

Type of institution[1] (Number of programmes)	Numbers of distance-education programmes using:		
	Regional services	Study centres	Residential schools
A (317)	85	113	53
B (291)	79	104	92
C (231)	44	55	50
Overall percentage (n = 839)	25	32	23

1. Type A: institutions set up to teach at a distance.
Type B: conventional institutions with distance-teaching departments.
Type C: conventional institutions with some distance-teaching programmes, but whitout a special distance-teaching department.

risky to make generalizations about student characteristics. Many distance-education programmes, especially some of the larger ones (such as those in the USSR and China) have a young adult clientele similar to that of conventional universities. Others, which include many of the 'open universities' and dual-mode correspondence programmes, often have an older student population, with a mean age in the early thirties. A minority of programmes (around 10 per cent according to the UNU/ICDL data base) are aimed at children who are unable to follow conventional schooling for various reasons (for example, the Sydney Correspondence School in Australia and some of the courses offered by the French Centre National d'Enseignement à Distance).

According to the UNU/ICDL data base, the percentages of distance education programmes at various educational levels are as shown in Table 3. This variety in programme offerings, and the implied variety of ages, motivations, and backgrounds of the students involved, should be taken into account in evaluating many of the optimistic, but often unrealistic, claims that there are common pedagogical assumptions underlying distance-education practices (for

TABLE 3. Percentages of distance-education programmes at various educational levels

Educational level	%
Primary (children and adults)	7
Secondary (children and adults)	25
Degree	20
Postgraduate	9
Further education	12
Continuing education for adults	27

example, concerning the autonomy of the adult learner and the implementation of andragogical principles in course design). The only assumption that it might be reasonable to make over a major part of the spectrum of distance-education clients is that there are probably a higher proportion of independent and strongly motivated students in such programmes than are found in conventional educational institutions. This is particularly true of adult students who are taking courses on a part-time basis alongside work and family responsibilities (a case-study by Ismail, to be featured in the next issue of *Prospects*, gives an account of what it is like to study under theses circumstances).

MEDIA AND TEACHING METHODS

We have already mentioned that print is the principal medium used in the great majority of distance-education programmes, and this is borne out by the data in Table 1 from the UNU/ICDL data base. Even the Chinese RTVU, traditionally a television-based teaching institution, intends to increase its use of printed correspondence materials. However, perusal of Table 1 brings out some interesting features. First of all, only a small minority of programmes (9 per cent) rely exclusively on print—and this represents a significant shift from the traditional correspondence study mode which was so prevalent only twenty years ago. Secondly, by far the most popular technical medium after print is the humble audio-cassette (appearing in 44 per cent of programmes). Thirdly, a significant proportion of programmes use relatively costly media: television (15 per cent), video-cassettes (21 per cent), and kits of material for practical work (18 per cent).

If one feature of distance education (as opposed to correspondence study) is the use of a range of media in an integrated fashion, another key feature is the provision of resources for contact between students and tutors, and for group and residential meetings. Table 2 gives an indication of the extent of the use of a regional organization, study centres, and residential schools, by the distance-education programmes on which information is held in the UNU/ICDL data base. This shows that about a quarter of these programmes provide a specific infrastructure for group sessions.

THE NEW TECHNOLOGIES AND DISTANCE EDUCATION

If the 1970s saw broadcast television being tried out as a component of many distance-education systems, in the 1980s it is the turn of the new computer-based technologies to make their contributions. (For an overview of some of these technologies and their relevance to distance education, see Ruggles et al., 1982; Bates, 1984; Bacsich et al., 1986.)

There are three main areas of application of computer-based technologies that are liable to have significant effects in the specific field of distance education. The first is in the area of course materials production, where the desktop publishing revolution is making it possible to improve drastically the quality and speed of production of print materials without increasing production costs. And as the case-study of Universitas Terbuka (which will appear in the next issue of *Prospects*) demonstrates, use of this technology is not a prerogative of developed countries. Universitas Terbuka produces its print materials on micro-computers and laser printers, thus cutting out type-setting costs and significantly reducing production times. A major advantage of electronic preparation and storage of the texts of distance-education materials, of course, is that revision and up-dating becomes much faster and more straightforward.

The second major application of computer-based technologies is for the storage and rapid retrieval of information—whether it be material held on videodiscs or on data bases. In countries where on-line access to data bases is easily possible (for example, to Vidéotex data bases in France, or to systems such as CompuServe or the Source in North America) there is an obvious potential for their use as a component of distance-education courses. In the United States,

for example, there is already an Electronic University Network which lists over eighty on-line data bases in its electronic library, to be used as a component of external studies courses (Electronic University Network, 1987).

The third, and perhaps most exciting, area is the use of computer-mediated communication services (such as electronic mail, computer conferencing) to allow students, tutors, and course development staff to communicate with each other at a distance, and even to run group seminars and discussions from home-based terminals. Early trials of these technologies are underway in an number of institutions (see, for example, Kaye, 1987) and their potential is discussed in detail in the article by France Henri on page 83 of this issue.

The integration of these applications of new technologies with existing distance education practice will not necesarily occur smoothly. Institutions which were set up using the old print technology may well have serious problems changing over to electronic publishing operations; use of on-line data bases by students taking distance-education courses raises potentially difficult issues of control, ownership, and up-dating of the material in these data bases; and the introduction of computer-mediated communication will change the role and job description of tutors, as well as making it much easier for students to have access to course development staff. These are substantively different issues from those raised by the use of computer-assisted learning (CAL) material in distance courses. Such material, whether provided to students on disk, or via on-line access, falls into essentially the same category as other course material in the learning package.

The intention of this brief general and introductory overview of distance education has been to set the scene for the more substantive and specialized articles that follow in this two-part Open File. The first set of articles, in this issue of *Prospects*, focus on a number of the key themes identified so far, namely:

The factors to be taken into account in planning distance-education projects, with a special emphasis on the use of systems analysis as a planning tool (Villarroel).

The main pedagogical issues of importance in the use of different media and teaching/learning methods in distance education (Dewal).

A consideration of the ways in which the questions of quality and relevance of distance learning course materials can be addressed (Zahlan).

The potential of new computer-based technologies for increasing the quality and amount of communication between students and between students and tutors on distance-education programmes (Henri).

A critical analysis of the cost arguments put forward in favour of distance teaching, as opposed to conventional classroom/campus-based provision (Rumble).

This particular selection of themes is based on a belief that the crucial issues to be addressed in this field concern the quality of the learning materials provided to students, and the level, nature and amount of interaction between learners and between learners and tutors/teachers. Both these issues have repercussions on the overall design and planning of distance-education systems and, above all, on their cost structures.

In the second Open File (in the next issue of *Prospects*), several case-studies of different distance education projects will be presented. Without any pretence at providing a comprehensive set of examples, these case-studies are intended to illustrate the diversity of provision in different countries, as well as to illustrate different perspectives on the phenomenon of distance education. Thus, there are accounts by a planner (the al-Quds Open University project), a dean of studies (the Chinese CRTVU), an administrator (the French Centre National d'Enseignement à Distance), university rectors (distance education at university level in Latin America; Universitas Terbuka, Indonesia), a professor of education (distance education in Poland), a course developer (the University of Zambia's External Degree Programme) and, last but not least, a student (from the British Open

University). The student's perspective often gets lost in much of the published material about distance education, or is provided in a surrogate manner through the writings of educational researchers and evaluators. Hopefully, the final article in this Open File will help redress this balance, and leave readers with a direct understanding of some of the pre-occupations of adults who take the often difficult decision to embark on a course of study at a distance. ■

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Planning of distance-learning projects

Armando Villarroel

If we analyse the documents describing the start of open university activities in Costa Rica, Spain, the United Kingdom and Venezuela (Perry, 1977; Villarroel, 1987) we find common denominators which were at the time strikingly obvious. First, there was the urgent need to justify setting up such institutions: because they were so different from the traditional ones already existing in those countries it was essential, when requesting public resources for their operation, to put forward a good social case for such educational institutions working alongside traditional ones. The argument most frequently advanced has always been that because they are flexible and potentially inexpensive to operate they can reach groups of people who because of their geographical location and position in society would otherwise have virtually no access to education.

At the same time, both the initiators of these new institutions and the educational community in general were understandably preoccupied as to how best to put into operation an entirely new concept for which there was no precedent.

Consideration of these two basic problems forced these new institutions to plan their activities from the beginning in a very special way.

Bearing in mind the key importance for distance-teaching programmes of the considerations we have just set out, we shall in this article conduct a global analysis of their influence and of the way in which they plan their activities. We shall begin with a summary description of the characteristics which in my opinion should be taken particularly into account for planning purposes. We shall then refer to the use of systems analysis as a key theory and instrument for the planning of distance-education programmes and, finally, in the light of what has been said, we shall identify the subsystems that are most characteristic of these programmes and their effect on planning.

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Distance teaching and its planning

Distance teaching is an innovation with its own particular characteristics, which has to be introduced into the educational framework without giving rise to undue hostility. This is another consideration which must be taken into account when planning its activities. We shall differentiate between distance teaching and conventional education, which will be referred to in order to set our subject clearly in its context.

It has been pointed out by various authors (Kaye and Rumble, 1981; Holmberg, 1985; Villarroel, 1987) that until about a decade ago the concept of and the term 'distance education' were practically unknown to many education specialists, though this has changed radically since. As Holmberg (1985) reported, there are several ways of organizing this type of education, most of them very recent, particularly those serving a large number of people. Examples are: (a) independent universities specializing in distance teaching; (b) distance-study units operating within traditional universities; (c) ser-

vice institutions which provide distance education on behalf of traditional universities; (d) public or private institutions whose distance-education services are 'sidelines'; and (e) distance studies organized on a co-operative basis by several different institutions.

The fact that in general these courses are innovative must be taken into account for planning purposes, since otherwise structure, functions and procedures will not be sufficiently clearly defined. As with all innovation, a degree of instability and imbalance is to be expected in the process of establishing distance education as an institution, as organizers are adapting to situations of which little experience is available. The instability gradually disappears as relative consolidation takes place at the later stages of organizational development, though few distance-study institutions have as yet reached this stage despite the progress made. The relatively scant experience of this type of education is thus an important factor which must influence our considerations on the planning process.

So as to be able to define more clearly the characteristics of distance teaching which affect planning, it is necessary to show broadly how it differs from traditional methods. As Keegan (1980) points out, the most obvious distinguishing feature of this method of education is the physical distance between tutors and students. The teaching is of a formal nature in that it uses technical means to transmit information, and two-way communication is stimulated to allow the student to consult his tutor; in addition, intensive use is made of industrial approaches for certain academic tasks and for the production of teaching aids.

We shall now consider four general aspects of distance education which affect the planning process. There are others which could also be included but the four selected will nevertheless give a fairly comprehensive picture of the situation in distance teaching.

THE NEED FOR HIGH EFFICIENCY LEVELS

As distance education involves various interlinked processes and its success depends on the completion of previous stages which themselves are interdependent, considerations of efficiency assume great importance. Unless proper attention is paid to efficiency the obstacles which frequently affect even the operation of the courses themselves will not be easily overcome. Naturally this has nothing to do with the academic quality of the products being developed but is strictly a matter of organization. Three basic conditions must always be met: (a) the academic product must be of satisfactory quality; (b) the infrastructure must ensure that the educational products and services offered reach the users, and (c) there must be a feedvack mechanism to improve the educational services provided.

The high efficiency levels necessary for distance education are particularly crucial in countries where educational institutions are not particularly modern. Introducing distance courses in such education systems presents planners with considerable additional difficulties due basically to the complexity of this type of education, which has many critical points in its operation. There are a number of different processes involved which must all be carefully synchronized, the programming allowing for very little flexibility in respect of the time intervals set.

The two key aspects of efficiency are the interaction between the various processes and compliance with deadlines. Both these requirements must be scrupulously observed, whereas in other education systems they do not have such high priority. Clear and unambiguous formulation of the necessary procedures, and of tolerance levels in the event of non-compliance, is essential.

NEED FOR SUITABLE MANAGEMENT

The organization of distance courses is further complicated by the fact that for the most part the people working on them adopt behaviour patterns based on traditional education, which are not always appropriate to this type of education. This is particularly apparent in the approach to the teaching/learning relationship, since the basic philosophy of distance teaching and the economic reasons underlying it imply that the tutor/student relationship must never attempt to emulate the traditional teachers' relationship to a class or the 'tutorial group'—a variation on the class/teacher relationship, which is often more appropriate to the workshop or seminar than to true distance education. Distance education is based on an indirect teaching relationship, using fundamentally self-teaching methods, the tutor acting as a catalyst to activate the skills and situations needed for self-education.

The components which must be planned relate to the teaching method and range from self-teaching aids to briefing and training tutors in a new approach and enabling students to take advantage of the new educational opportunities offered by acquiring the necessary cognitive strategies. All these changes in approach are made little by little as distance-teaching procedures are internalized both by teachers from traditional education and by students embarking on such courses, with the help of the institutions offering this type of education themselves.

THE NEED FOR MANAGEMENT MATCHING THE METHOD

Another important consideration is the way in which distance-education institutions are managed. If we start from the premise that for distance-study institutions to survive they must reach a certain level of efficiency, it seems logical that, without changing their nature, they should be prepared to use control procedures similar to those used in business, where high levels of efficiency are essential. Nevertheless, here also, because of the very nature of educational institutions, there are contradictions that the planners must take into account. First, even though, as explained above, commercial criteria must be applied to some extent, it cannot be forgotten that distance-study institutions are educational units with social goals which require management, particularly in universities, to respect a range of differing opinions. In a way this is incompatible with the vertical system of authority usual in business enterprises, though these do have reticular management systems too. Distance-teaching organizations should perhaps adopt a style of management similar to the participation style, used by large corporations in the post-industrial world, which guarantees and preserves efficiency without radically modifying the type of relationship which characterizes distance education.

INTERACTION WITH THE ENVIRONMENT

Another feature of distance courses is the fact that they require a high degree of interaction with the external environment. This has its positive side, of course, although to develop it properly requires very close interaction with the communities served. It should be repeated that the chief justification for these programmes is that they were set up to serve people who found it difficult or even impossible to take advantage of traditional educational facilities. Since distance studies are an alternative and flexible form of education it is absolutely imperative that they make direct contact with their target audience.

The growing tendency of distance-study systems to depend on certain external factors has its negative aspects too. In the longest-established open universities, development of the relationship with the student leads to the establishment of branches at strategic points relatively close to where students live. But small budgets and the need to increase coverage mean

that these offshoots (known as local, associated or academic centres) are dependent wholly or partly on agreements or arrangements with various local, regional or national bodies. In some countries these local centres are subsidized directly by public or private bodies which, for example, pay for the construction, purchase or rental of premises or indirectly by the provision of some services free of charge or at subsidized rates. For obvious reasons, this often results in political dependence and conflicts of interest. An intelligent balance must be established between the need to use extra resources to make it possible to expand educational services and strengthen the commitment to users and the possible risk of compromising independence of action by accepting such help. This is, once again, a situation not experienced by traditional educational organizations, which are generally dependent on a single locality and do not have the broad range of relationships with different localities with which distance-education institutions have to contend.

To sum up, analysis of the points mentioned above shows that distance courses are breaking new ground and: (a) their structures and procedures still need to be consolidated; (b) they are vulnerable and dependent on high efficiency levels which are not very easy to attain in some countries; (c) they require a different type of organization from that of traditional education, which is not appropriate to distance study; (d) their management style must be specially adapted to their needs; and (e) they are dependent on the external environment, which is simultaneously a strength allowing them to increase their cover and a weakness making them dependent on other authorities.

We must there therefore conclude that such complex courses cannot be planned in a linear fashion but that many dynamically interacting factors must be taken into account. We believe that the basic planning tool must be systems analysis.

The use of systems analysis as a basic planning instrument

A review of the literature concerning the conduct and hence the planning of the activities of organizations such as distance-teaching institutions argues strongly for systems analysis as the appropriate tool for this task. In fact the 'systems approach' which has its origin in an organic conception of biological sciences (Von Bertalanffy, 1968) and its derivatives (general systems theory, systems analysis, systems engineering, cybernetics, operations research, theory on information and the decision-making process, etc.) applied to the study of complex organizations starts from the notion of a 'whole' rather than an entity subdivided into parts. The fundamental premise of systems analysis is that it is possible to understand the nature and operation of the various component subsystems of a given system and to understand the relationships between the subsystems and the interactions between the environement and the system studied (Palavicini, 1981).

When analysing a system, whether in the social sciences or in education, there is a tendency to prepare models which assist by providing a simplified picture of reality. In the empirical sciences, including education, the use of this simplified picture permits experimental data to be correlated with mathematical symbols in a more or less precise manner. In general, this type of outline is a model which in a particular way indicates a relationship of direct or indirect causal influence between different variables.

Holmberg (1986) considers it very difficult to apply precise mathematical models to the study of education. If this is true it would be preferable to use the so-called verbal models. These can be understood intuitively without necessarily being inaccurate or ambiguous. For reason of time and space we shall not discuss how models are used to prove theories or as reference instruments to understand reality, but shall take it as read that models are extremely helpful

for taking decisions and determining their possible consequences.

Systems analysis claims also to be able to describe and analyse the operation of a complex organization or of a smaller unit which is defined both intrinsically and in its relationship to the environment. Obviously formal study of the functioning of a system and its component subsystems with a view to understanding and modifying it entails a degree of simplification of reality.

As shown by Holmberg (1986), cybernetics sees the learning/teaching process as an attempt to create a regulatory, circular movement similar, for example, to the model of a thermostat. Any change in one part of the circle is compensated for by changes in the other parts. It can also be compared to a pilot's reactions to winds and currents. The immediate feedback in programmed learning is a representative part of this movement. Anticipation of the reply of a student and programming of corrective mesures on the basis of an optimum strategy are the prerequisites. The development of algorithms to maximize the effectiveness of teaching is thus considered an important goal.

I should like to illustrate these contentions by a brief reference to the application of systems analysis in a complex distance-study organization, the Venezuelan National Open University (UNA). The comments below are made basically to illustrate a thesis and provide first-hand evidence of the justification for the use of the systems approach in this context, rather than purporting to give a historical account of the Venezuelan National Open University.

The charter establishing UNA sets forth a systems model as the standard basis of the institution (COUNA, 1977), proposing that it should function as a system composed of interconnected subsystems which maintain a close, dynamic relationship with each other. This presupposes the ability to manage a complex system with a high degree of efficiency.

However, a discrepancy between the ideal and the actual situation soon became apparent, and gradually the necessary adjustments were made (Villarroel, 1980). Despite the abruptness of some changes the basic concept of interconnected subsystems has always been maintained, at least officially.

Although this approach was not used at every stage of the establishment of the Venezuelan Open University (and at certain times it was not a realistic way of proceeding) the very fact that it was still considered desirable, and that the institution is moving towards it, is important, since it implies tacit recognition of the systems approach as the most effective way of managing an operation as complex as an open university. This concern to study or visualize processes globally is characteristic of many institutions of this type.

In the longest-established distance universities, such as the Open University in the United Kingdom, which have a broad range of operational experience, much progress has been made in sectoral planning and the interrelated study of the processes involved. In other distance universities such as Universidad Nacional de Educación a Distancia (UNED) in Costa Rica and UNA in Venezuela there are vice-rector's departments for planning and special sections which carry out plans and projects and ensure maximum efficiency. In general, the planning process is very different for a distance university from that of traditional educational institutions, in which it is much more general, not requiring the attention to detail necessary in distance-teaching institutions.

In the final section we shall describe how the systems approach can be used to analyse, put into practice and improve some of the particular subsystems which coexist in distance education. Analysis of the main distance education subsystems described by Kaye and Rumble (1981) shows that some of these can be found in other types of education. Nevertheless, I feel that the course and student subsystems in a distance-teaching have system very special characteristics distinguishing them clearly from those of traditional education.

Two subsystems typical of distance education which illustrate the use of systems analysis

The course subsystem involves the design, production and distribution of teaching materials which obviously create situations very different from those obtaining when students attend courses in person.

We could simplify, saying that there are several stages in the preparation of courses: (a) converting the ideas of specialists into prototypes for courses; (b) developing procedures enabling those courses to be assessed constructively and periodically in order to check that they are still relevant; (c) designing mechanisms to assess student performance and, of course, subjecting those mechanisms to quality control; (d) reproducing course prototypes and evaluation procedures to apply to student performance and courses; (e) distributing course material to students; and (f) establishing feed-back machinery so that the system can be self-regulating.

Setting this subsystem in motion is a very interesting task since, as we have already seen, the interrelated processes have to be dovetailed. If systems analysis is not used there is little chance of success. For all these activities to be carried out in an orderly fashion there must be an information retrieval-and-control process which can be established only with the assistance of computers.

The other important subsystem concerns the students. This subsystem is at the heart of the teaching-learning process, which in a distance-teaching context involves an indirect relationship. Students on distance-study courses find they are dealt with in a very different manner from traditional education. Contact is established through: (a) tutorials; (b) admission to courses; (c) administrative/academic situations; (d) examinations and the award of qualifications; and (e) student registers.

Tutors in a distance-education system are responsible for tutorials and in that capacity play a double role. On the one hand, they make good the shortcomings of self-teaching material and, on the other, they form a human link between the institution and the student. They can provide both academic and personal counselling as the student requires. However, they cannot ever replace the teacher in the classroom or have the type of relationship with students that they would have with a class.

In general open universities, because of the philosophy underlying them, operate very liberal admission procedures, even in societies where the system is fairly élitist. Nevertheless, the student must register, and needs guidance on how to proceed with the curriculum. By administrative/academic-type situations we mean the students' need for academic advice on such matters as preliminary qualifications or compulsory subjects and administrative matters which have to be dealt with at specific levels.

The fourth point at which students come into contact with the open university consists of examinations and the award of qualifications. European universities, for example, hold examinations at fairly wide intervals. The nature of the education system in Latin America, however, requires university students to take examinations at very frequent intervals and, if attendance at examination centres is required, these must be spread over a large area. This creates very difficult logistical problems.

The fifth point is the keeping of student records. Again we find a situation similar in some ways to that obtaining in traditional universities, but not exactly identical because in distance-education institutions the students are widely dispersed geographically and a good many of them are studying half- or part-time and progress at their own speed. All this needs fairly complex control and information systems for the award of the appropriate qualifications.

After analysing these two important subsystems, it only remains to note that the planning of distance-education systems is a very complicated process which is necessarily governed by the nature of the particular education system, although not totally, even in countries with great experience which have carried out thorough

research into course management. For control and follow-up there must be recourse to procedures such as systems analysis which take into account the full complexity of the process and the interaction between the various components.

In general terms, distance-teaching, despite its complexity, is an educational procedure which we expect to improve steadily. It offers a definite alternative to traditional courses based on attendance at classes, but its full potential has not yet been explored. Nevertheless, there is a large and growing body of educators who consider distance education feasible. The planning problems we have described and of which there is already a degree of awareness will be resolved gradually as the system matures. In brief, distance education is a very interesting challenge in both the developed and the developing countries, especially in the latter, where it offers a more economic alternative to traditional education systems. ■

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Pedagogical issues in distance education

Onkar Singh Dewal

An overview

Distance education is a flexible alternate system of education which, to borrow Faure's (1972) words, endeavours 'to redistribute teaching in space and time' promotes 'assisted self-learning' and helps the individual to 'choose his path more freely in a more flexible framework'. Pedagogically speaking it is 'non-contiguous study' involving 'guided didactic conversation' (Holmberg, 1981). It offers an industrialized form of teaching (Peters, 1983) which emphasizes rationalization, mechanization, mass production, division of labour, concentration and control. Its evolution from postal teaching to open distance education has been rather uneven, both in geographical spread and pace of development. Whether it was due to the tyranny of distance as in Australia and Canada; or the learner's willing choice not to leave home or work-place and attend classes full time as in European countries, distance education remained a second choice up to the 1950s. It gained respectability and parity of esteem in the early 1970s when the United Kingdom established the first multi-media Open University.

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By the 1980s things had changed. Distance education came of age. Now the worldview is that it is cost-effective, has a wide reach and is a liberal and individualized form of instruction. It provides freedom to the learner and helps him move at his own pace. It promotes social equity and supports national economies by taking education to the doorsteps of the work-place.

In the last twenty years a number of independent distance-teaching institutions have been formed. Some case-studies have been reported by Mackenzie et al. (1975), Perry (1976), Unesco (1978), Kaye and Rumble (1981), Rumble and Harry (1982) and Dewal (1986). The *Zeitgeist* has been best summed up in India's National Policy of Education (India, 1986): 'the future thrust will be in the direction of open and distance education'.

It would be naïve on my part to assume that the setting up of more institutions alone indicates the potential, verve and vitality of distance education. Its credibility does not rest upon setting up more institutions, but on how effective and efficient the system is. The effectiveness has to be gauged by the extent stated goals are attained and efficiency by how cost- and time-effective the system is. A hard and close look at the pedagogy of distance education sensitizes us to its strengths and weaknesses and prompts us to make the system, to use Coombs' (1968) words 'do more than what it has done and be better than it has been'. Our understanding of pedagogical issues is the first step towards making the system more effective and efficient.

It makes sense to start an analysis of pedagogical issues by asking rather a blunt question: Is there any difference between the peda-

gogy/andragogy of face-to-face and distance education? The answer is: Yes, emphatically.

Four elements, the learner, the teacher, the content and the context, constitute the warp and woof of any instructional system; this is irrespective of whether curriculum transactions are through the face-to-face or distance-teaching mode. Although in these two modes elements remain the same, their functions and pattern of interaction change. In face-to-face teaching, the teacher is the hub of the instructional system and occupies the central position. He is the main instrument for transacting content. In distance teaching, the central position goes to study materials with or without personal contact sessions, and the teacher has only an indirect or vicarious role.

The learner in face-to-face teaching, especially in a formal system, enters at one point and then moves sequentially. He is a full-time student and may join the world of work at some terminal point. In distance education, the learner often has the freedom of multiple entry points, may or may not move sequentially and is either in the world of work or is fully set to join it at any time. Furthermore, he is more autonomous (Moore, 1977) and has intrinsic motivation, sometimes for educational improvement but often for improved job opportunities. These factors raise important pedagogical issues which touch upon how content is transacted, how it is structured, what media are used, how the question of individual needs and motivation is tackled, and what the role of evaluation is. This paper discusses these issues.

Transaction of content

Instruction is a deliberate attempt designed, within a given environment, to help the learner to interact and assimilate learning for future use. In face-to-face teaching, the onus of transacting content rests principally on the teacher. He may use media to support his talk or may ask learners to use a library or other learning resources to supplement study. None the less, the teacher remains the central figure, the hub of the system. On the other hand, in distance education it is not the teacher *per se* but the study material which is the principal mode for transacting content.

Although study material is the main element of the instructional system in distance education, additional elements like contact programmes and resource/study centres are also used to reinforce and augment student learning.

STUDY MATERIALS

The term 'study material' is used here to include print, audio, video, broadcast, computer software and experimental kits. Study materials constitute the core of the instructional system in distance education. Most distance-teaching institutions provide printed texts only. Others provide in addition audio-cassettes, while still others provide video-cassettes, slides and experimental kits. Some institutions, such as the British Open University, design integrated learning packages which include set books, printed supplementary materials, television and radio broadcasts, and experimental kits.

Printed study material comprises texts or set books, and/or self-instructional lessons or modules. Institutions which have an open-door admission policy, also develop bridge or foundation or preparatory courses. These materials are designed with a view to teach basic and foundation concepts to learners so that the core or the main study materials can be fully understood.

There is a difference between bridge and foundation courses. Whereas foundation courses concentrate mainly on teaching of basic concepts, bridge courses provide those essential capabilities (not necessarily basic concepts only) which help the learner to transfer easily from the ongoing course to the target course. Some institutions, besides developing bridge/foundation courses, also develop entry behaviour tests so as to find out how much the learner knows and what specific support he needs to be given. If bridge or foundation courses are to be useful it is essential that institutions inquire

into learners' prior knowledge and skills. This can be done if some entry behaviour tests are given to students to gauge their initial capabilities. After giving these tests, information about students' performance has to be fed back to students informing them whether to go for foundation courses or not. This is a very meaningful but a time-consuming exercise and poses the difficult problem of administering tests at a distance.

Besides core and foundation courses, institutions also prepare study guides. These study guides give a *Gestalt* view, a total view within a context, of the courses to be studied as well as information about examination schedules, contact programmes, student assignments and so forth. Study guides prepared in the Open School, India, and Deakin University, Australia, provide material on how to study, how to take notes, how to summarize and how to write assignments. Such study guides prepare a mental set in the learner, and by giving some understanding of what is required make him more responsive to the new system.

Other components of study material are audio-visual materials and experimental kits, prepared as teaching material in their own right or as adjuncts to printed materials, to play either enrichment or supplementary roles. Non-print material and other communication technologies are not just fads. They can be very meaningful if the contents of different media, appropriately used, mutually reinforce each other and conjointly help the learner to achieve his goals. Not many institutions can go for such a media mix, as the production of multi-media study materials in a complex operation. Not suprisingly, many institutions only go for a simple media mix like printed texts and audio-cassettes. Very few institutions use other media (eg. television or radio broadcasts, video-cassettes, or computers). Discussion on the strengths and weaknesses of different media will be taken up shortly.

It would be foolish to assume that all educational objectives (cognitive, affective, and psychomotor) can be taken care of by study materials alone. When it comes to practical work, or to the development of social skills, study materials need to be supplemented by contact programmes, where students can interact with tutors personally.

CONTACT PROGRAMMES

The second main way of transacting content is by organizing contact programmes. There are two schools of thought with respect to the need and utility of such programmes. Some distance educators (e.g. Holmberg, 1985) feel that contact programmes impose restrictions on the freedom of learners. In his view insisting on learners attending contact programmes organized at a particular place and time does not fit well with the spirit of distance teaching, which is liberal and non-restrictive, and offers basic freedom to the learner to learn at his own time and pace. It is further argued that if proper care is taken in the design of learning materials, almost all content can be taught without resorting to contact programmes.

The second school of thought gives substantial weight to contact programmes. It is believed that there are many teaching points and teaching skills which cannot be successfully dealt with by study materials alone. Sewart (1981) argues that, however perfect the instructional package may be, it cannot do the whole job of instruction. The department of External Studies at the University of New England is an example which considers contact programmes (residential schools) important and obligatory for students to attend.

Both arguments are convincing, but it would be unwise to take an either/or position. The road to Nirvana lies in the 'right mixture' of interaction and independence (Daniel and Marquis, 1979). Contact programmes, in my view, should be organized to achieve three objectives, namely: to teach concepts which have not been dealt with adequately in study materials, to develop practical skills, and to develop social skills. An institution that organizes contact sessions only to teach what has already been taught through study materials does so with a

positive disregard to students' time and money.

As regards budgeting of time during contact programmes, I am of the view that 60 per cent of time should be devoted to solving individual problems or on tutorials. In the reamining time, students can be provided teaching of basic concepts. A small gap in understanding of basic concepts results in wider disparities of students performance later on.

It is better to organize contact programmes at different times of the year. For example, the first contact programmes might be of short duration and should orient students towards the new form of learning, that is, distance education. Students should be made aware of their role and new responsibilities, and of the institution's expectations. The second contact programme might be organized when more than 50 per cent of course mailings have gone to the students. This programme (sometimes a residential school) should be of longer duration. Tutorials and teaching of basic concepts should be the main thrust. A third contact programme could be held just before the final assessment. This can be devoted to helping students revise, and to building relationships between the various concepts previously learnt.

RESOURCES AND STUDY CENTRES

Study centres constitute the third mode for transacting content. Depending upon financial resources, distance-teaching institutions set up resource centres or resource/study centres. The former provide learning resources only whereas the latter also provide facilities for individual or group tutoring and academic guidance/counselling. I would plead that distance-teaching institutions set up resource/study centres which could act as information centres, resource consultation centres, and tutorial and counselling centres.

In some developing countries resource/study centres are either conspicuous by their absence, or are run very ineffectively. They hardly undertake tutoring and counselling functions. Even basic functions like information provision or resource consultation are performed poorly.

Coltman (1983) has forcefully argued that there are crisis periods in the life of the distance learner. Proper counselling at the proper time is of immense help to students. The distance learner needs guidance before registration, soon after receiving course materials, and just before the time of examination. Qualified counsellors should be available at study centres to guide distance learners and help to minimize drop-out rates.

Study centres have two more invisible strengths: they develop a sense of belonging in the learner and make him feel less solitary. They promote peer interaction, and actually develop expressive skills.

Structuring and presentation

A cursory glance at study materials, especially in print form, may lead us to the conclusion that institutions spend time, energy and expertise to different degrees in structuring and sequencing content. Some institutions (like the British Open University) use a course team approach and develop excellent study materials, some design materials as classroom notes or as conventional textbooks. Some institutions use the expertise of transformers, educational technologists or instructional designers. Some use a single-person approach in writing materials.

Structuring content for distance learners is a difficult professional job. We should structure content in such a way that it communicates the idea of wholeness as well as building relationships and correspondence. In presenting structures Piaget (1971) emphasizes order relationship and Bruner (1964) mode (active, ikonic, symbolic) economy (optimal amount of information presented and held in mind for comprehension) and power (potential to generate new structures or new relationships).

For our purpose, structures are conglomerations of facts, concepts and ideas which the writer wants to present to the learner at a given time for efficient assimilation. One of the important points to keep in mind is to present

concepts in lateral and vertical relationship with a view to building networks of superordinate and subordinate concepts.

The best way to structure content is to analyse the teaching task into facts, concepts and ideas and then to prepare a sort of content map, superordinate concepts subsuming subordinate ones. This hierarchical body of knowledge should first present basic concepts which have the characteristics of simplifying information and generating new information (Bruner, 1969). It is only then that specific details should be brought in. Materials developed on the principles of progressive differentiation, consolidation and integrative reconciliation (Ausubel, 1968) help assimilation and quick recall.

It has been my experience that whenever and wherever instructional designers or educational technologists form part of course teams, more time is devoted to structuring aspects. They make conscious efforts not only to present content more lucidly but to make it more interactive in nature and easier to assimilate.

If structures refer to content, sequencing refers to arrangement or positioning of content. To say that the simple, concrete and known should be taught first and the complex, abstract and unknown later on is fine but not very helpful. Different types of tasks demand different types of sequencing (Gagne, 1977). Facts need a lot of repetition or revisitation, concepts are taught by examples or similarities, and contrasts and rules by induction.

Before study materials are developed there must be a thorough discussion between subject (content) experts, educational technologists and editors on how much content should be included in one lesson, what aspects of content should come at the beginning, what should follow what, and how the concepts should be sequenced.

Many distance-study materials starting with objectives and advance organizers, end with a summary or a post organizer. In between, in-text questions are used. Meaningful study material should start with objectives followed by advance organizers. Advanced organizers should perform two functions: first, to link the lesson to the previous one and, secondly, to give an overview of the basic concepts contained in the lesson.

In-text questions should be interspersed in the body of the study material. They should provide opportunities for self-assessment, and develop the learner's skill in organization. The objective of in-text questions is to help students consolidate their learning. An innovative way to use in-text questions is to invest them with diagnostic functions. They may be so framed as to test understanding of potentially important concepts. If students lack mastery of basic concepts, remedial sections may be added at specific branch-off points. Such a format can be used for a group with varying entry behaviours.

Some instructional designers make special efforts to ensure that study materials are not only factually but conceptually rich. Such a goal calls for networking and building relationships of related concepts. One way to ensure conceptual mastery is to provide concept maps in study materials. The other way is to ask learners to construct concept maps schematically from the given verbal expositions.

It has been observed that factually rich students are generally syllabus-bound, whereas conceptually rich students are syllabus-free. It has also been observed that the former use a surface level approach and the latter a deep-level approach (Parlett, 1970). If institutions wish to promote deep-level understanding it will be essential consciously to adopt a presentation strategy which helps learners to judge issues from their own point of view, critically and analytically. Such learners adopt what Ashby (1973) calls a creative dissent approach and are 'reasonable adventurers' (Heath, 1964) who believe but are sceptical, and are creative as well as critical. Although studies have been conducted to identify characteristics of deep- and surface-level learners (Martin and Saljo, 1976; Pask and Scott, 1972; Svenson, 1977) no attempt has been made in this research to present materials in such a way as to develop deep-level study habits.

Language and style of presentation are

equally important. It is obvious that the language used in study materials should be simple, direct and effective. As far as possible the writer should use a common vocabulary and simple expressions. It is better to avoid a passive style, double negatives and involved constructions (Dewal, 1981).

The style of presentation undoubtedly should be warm, personal and intimate. If writers can weave in humour, cartoons and wit, study materials will take on a new colour. Graphics and visuals are also equally crucial. They enliven the monotony and dulness of the printed page, provide variety, give a touch of concreteness to abstract verbal expositions, and simplify complex information. Although graphics have a pedagogical value, their inclusion in study material means spending more time and money. Where printing technology is primitive and resources are scarce, inclusion of graphics means more money and many logistical problems. It is for this reason that distance-education materials in many developing countries contain few or no graphics.

Without going into detail, there are a few points that need to be raised before including graphics:

Are graphics crucial? Will they reinforce and strengthen the verbal information? Can graphics present the verbal message more economically and forcefully?

Is the size of the illustration appropriate and has it been positioned rightly on the page?

Does it play an active or passive role? (An illustration is active if it helps the learner to process the information contained in it.)

The general page lay-out of the study materials can contribute to their attractiveness, and this can improve readibility and maintain motivation. An attractive cover design rivets attention. Similarly an attractive page lay-out helps to process information more effectively. Imagine page after page in a uniform type face of the same size, or a cluttered page with narrow margins. Contrast it with a page with multiple colours, different type sizes and type faces, underlining and boxes containing important concepts, appropriate margins and diagrams, visuals and cartoons. It is obvious that the latter will be more successful in promoting student learning.

Use of media

In the last fifty years there has been a tremendous explosion of communication technologies. Distance education cannot insulate itself from this technological imperative. The result has been a growing interest and an emotional fascination with the use of modern communication media in distance education. Four trends are presently discernible (Bates, 1984) in the world of communication technology. A wide range of media is now available, there is a greater diversity of access to new media, costs are coming down, and new media are now available which provide greater control to students.

Although there is a surge of hardware in the technology market, actual use of technologies in practice is low and marginal. Only a few institutions use new media in a significant and substantial way. Some Australian universities use audio-cassettes as an adjunct to print. The Open University in the United Kingdom uses radio, audio-cassettes, television broadcasts and video-cassettes as components of study materials. Allama Iqbal Open University, Islamabad, uses television broadcasts in adult education programmes. Some institutions in Europe, Canada and the United States use video-cassettes along with print.

There are reasons for the low and marginal use of technologies. First, technologies are available but programmes are in short supply. Those in control of finance may give money for purchase of equipment but not for appointing staff to produce programmes. Secondly, even if staff is available the quality of programmes produced is not always of a high order. The media producers, when not properly integrated into the educational strategy, often give prominence to production techniques and formats, whereas content experts prefer to put the stress on subject matter. Often there is a lack of

understanding between them which results in programmes that consist more of production sugar-coating than of teaching pill, which is not to say that all teaching has to be bitter! Thirdly, the maintenance of hardware is very poor. When audio- or video-cassette players break down, repairs take an unusually long time. This has been our experience in India, except in the Satellite Instructional Television Experiment (SITE) in 1975/76, when maintenance was prompt. Fourthly, whenever technologies are used in instruction, in the form of radio or television broadcasts, or audio- or video-cassettes, or computers, the user teacher is often not involved in the planning. The resultant top-down planning isolates the teacher, who considers media as outsiders or intruders. As a result, the technologies are used marginally.

Developing countries, in the future, may go in for the use of technology on a bigger scale. When it is done it should be with a clear view of strengths and weaknesses. Technologies should be used on considerations like whether the use is administratively convenient, financially viable, technically possible, pedagogically significant and accessible to the student user.

It would be unwise to use media only because they are available. The chief criterion should be not the availability or access to media but their instructional potential, their teaching effectiveness. Some institutions use radio and television broadcasts as adjuncts to printed materials. The strength of such a media mix is that it costs little to the students and can reach out to a large number. The weaknesses of this arrangement are that the messages are ephemeral, and students do not have any flexibility and control to refer back to the information presented. Furthermore students receive the message passively, and there is no active interaction between students and the content of learning. Often the broadcasts are at inconvenient times, and students find it difficult to view programmes at that hour. Due to the ephemeral and transient nature of the medium, programmes broadcast via radio and television can often only be of a general-awareness nature; in-depth study of a topic or theme cannot be expected from radio and television broadcasts.

Another media mix is the use of audio- and video-cassettes along with print. The chief merit of audio-cassettes is that they are cheap and easy to produce. They can be easily integrated with printed material. Their weakness is that they are relevant only for a limited range of topics, and cannot present experiences visually. Video-cassettes have a great advantage over audio-cassettes, and their visual reach and potential for presenting unique learning experiences is prodigious. As compared with the production of television programmes for broadcasting, video-cassettes are easy to produce. Students in developed countries have easy access to audio- and video-cassette players. But in developing countries it is a distant dream.

Telephones can play an important role in distance education. We have examples where distance-teaching institutions use telephones to conduct audio conferences. By using telephone amplifiers the speaker can reach out to several students. This development is hardly visible in developing countries.

Computer may have a major role to play in distance teaching in developed countries. Unlike radio and television, or for that matter audio- and video-cassettes, they are highly interactive and provide flexibility and control to the learner in terms of what to study and how much to study.

Individual needs and motivation

It would be unjust to say that the distance-teaching mode does not cater for individual needs. The argument that individual differences in terms of cognitive abilities, levels of comprehension and learning speed are not taken account of in distance study is rather uncharitable. Conscious efforts are made in distance education to cater for individual differences. By design it is done through personal contact programmes and through tutors' comments on student assignment. Provision of foundation courses and building diagnostic and remedial sections

in learning packages are also ways by which individual differences are taken care of.

In developed countries telephone tutoring and teleconferencing are two principal modes of attending to individual needs. Telephones are very effectively used in secondary-level distance-teaching institutions in New Zealand. Teleconferencing is not an uncommon feature of many American distance-teaching institutions.

In developing countries the chief way of attending to individual needs is during personal-contact programmes. Tutorial sessions are planned specially for individual tutoring and for building up a personal rapport. Many a time institutions write to students before contact programmes begin to send their specific problems. These problems are scrutinized and classified and then taken up in contact sessions.

Personal communication through letters is yet another way of building a guided didactic conversation. Although some institutions promptly reply to students' letters, there are some which take a casual and indifferent view (Dewal, 1983). The latter demotivates students and shakes their faith in the system itself.

Motivation in face-to-face teaching is initiated and sustained by student-teacher interactions in and outside the class. In distance teaching, motivation is initiated and sustained primarily by study materials and student-support services. Neatly designed and attractively presented instruction packages are the first steps to initiating motivation. Motivation is sustained by appropriate techniques of structuring and sequencing. Prompt student-support services, whether in the form of study centres or counselling centres or lending libraries, are yet another way of sustain motivation.

Motivation is a complex issue. It is not a unidirectional but a cyclic process. It influences learning and is in turn influenced by high performance. Any material design strategy that ensures high achievement promotes motivation. Nicely designed and attractive instruction packages are motivating. Factors like effective language, and a warm and personal style of presentation, not only sustain but may also initiate motivation.

Evaluation

The spirit of evaluation as monitoring, feedback, control and correction, should permeate the entire system of distance education continuously and comprehensively. Evaluation should not be considered as a routine chore coming at the end of student activities. It must be a wide-based concept covering what Stake (1967) calls antecedents (background and circumstances), transactions (methods and strategies adopted) and outcomes (student attainment and materials produced). Such a broad-based approach calls for change in thrust, mode and methods of evaluation (Dewal, 1986). Let us take student evaluation first.

All institutions of distance education conduct final, summative, norm-based evaluation of student achievement. This is an institutional requirement and serves selection and grading functions. Its value is more to the consumer in the labour market than to the learner. What is needed is continuous, criterion-referenced, periodic assessment. But provision of continuous and criterion-based assessment calls for resources. It is a major time-consuming task. Institutions like the Open University in the United Kingdom use computers as well as tutors for evaluating students' assignment throughout the year, and for informing students on their progress. Pedagogically, it is essential that students should be informed regularly about their progress on the course. Failure to know how one is progressing can be confusing and demotivating.

For effective continuous evaluation, four factors are important, neglect of which may further de-motivate students and frustrate institutional efforts. They are: questions need be specific, clear and criterion-based; the number of questions and the frequency of assignments must be appropriate; tutor's remarks have to be specific and positive; and the turn-round time has to be fast.

QUALITY OF QUESTIONS/ACTIVITIES

Questions and activities included in student assignments should be designed carefully. They should be specific and precise and should demand high-order cognitive capabilities, like application, synthesis and organization. Questions merely to test recall are not effective. Nothing is more pointless than mindless, dull and mechanical assignments. The tragedy becomes compounded if such assignments are compulsory and contribute to final credits. Experience shows that not many teachers can design good, clear criterion-referenced tests. In such a case orientation workshops need to be organized. (When I was the director of the Open School in India, I made orientation of evaluators a regular annual feature. The University Sains in Malaysia has an arrangement with the Distance Education Unit of Deakin University, to orient their faculty in techniques of course development and course evaluation. These efforts have helped in improving the quality of assignments.)

LOAD AND FREQUENCY OF ASSESSMENT

The number of questions included in an assignment should be decided by factors such as the number of assignments the learner is expected to carry out, how much time the learner can conveniently devote to answering assignments and the nature of questions/activities; does it call for armchair study or does it involve field work and experiments? The frequency of assignments varies with different institutions. Generally, a distance-education institution in India sends assignments to students five to six times a year. It is better to decide the frequency of dispatches at the very beginning of the course and let students know the dates.

TUTOR REMARKS

When students answer assignments, they return them for evaluation. Different institutions adopt different practices in evaluating these assignments. Some engage full-time, others part-time, tutors, still others give them to outsiders on a contract basis. Though no practice can be considered totally good or bad, the last one has certain disadvantages. Outsiders may evaluate rather superficially and give only global comments which do not help the learner. It is imperative to orient evaluators to the need to write meaningful remarks on student assignments. Evaluators should specifically tell the learner what mistakes have been made and how they can be remedied. Superficial assessment is totally irrelevant in distance education. Although it is taxing and time-consuming, tutors must give detailed comments on assignments, which should be positive and remedial in nature. General comments like 'good' or 'poor' are meaningless to the learner.

TURN-ROUND TIME

The picture is often dismal regarding the turn-round time. Many institutions take three or four months to return students' assignments. Such a long time has neither feed-back value nor does it motivate learners. On the contrary, a long turn-round time positively demotivates the learner and shakes his faith in the system. Ideally the turn-round time should be twenty to thirty days or less.

COMPREHENSIVENESS

The expression 'evaluation should be comprehensive' means different things to different people. It may mean that we should not only evaluate lower cognitive abilities but also the higher ones. It also means that evaluation should cover not only the knowledge aspect but the affective and psychomotor domains. It may

also mean that besides evaluating students' performance one should evaluate the methods used, the materials prepared, and the systems operating.

In distance education, conscious efforts should be made to evaluate study materials, as they form the core of the system. Nathenson and Henderson (1980) used students' feed-back to improve learning materials. Formative evaluation of instructional material should be the important activity of any distance-education institution. Cronback (1963) has rightly said that 'evaluation used to improve the course while it is still fluid contributes more to improvement of education than evaluation used to appraise the product'.

Distance-education institutions, from time to time, should also evaluate their various subsystems and should judge whether they are moving in the direction of stated objectives. In many cases institutions, like individuals, do not want to change. They fight to remain the same (Schon, 1971). A living and responsive institution should have the willingness to evaluate its subsystems on goal effectiveness, internal efficiency and cost effectiveness. Such a task is difficult but imperative.

If we want distance education to have credibility and parity of esteem we cannot but remember Auden (1966):

> The sense of danger must not disappear.
> The way is certainly both short and steep,
> However gradual it looks from here.
> Look if you like but you will have to leap. ■

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Issues of quality and relevance in distance-teaching materials

Anthony B. Zahlan

Teaching materials are critical tools in any education system. In distance-teaching systems they assume a central place. In this article teaching materials include textbooks, monographs, videos, lectures, tapes, examinations, exercises and laboratory kits. Since the written word is still the major component of distance-teaching material, however, this article gives it a predominant place. The remarks apply equally well to any media. A cursory examination of teaching materials in use in both residential and distance-teaching systems of the Third World indicates that there are two serious and unresolved issues of quality and relevance. Distance teaching in industrial countries was built upon a well-developed intellectual foundation. This is not the case in the Third World.

Quality is one of those characteristics that are very difficult to define in absolute terms but are readily obvious. A group of professionals of high standing in their respective fields could easily classify material by the quality of its contents: as being of good university quality, acceptable or unacceptable. In this discussion quality is meant to refer to the intellectual contents of the teaching materials rather than to the physical state of the product. The physical state is defined by the quality of the paper utilized, the type size, the page layout, and so forth. Obviously, the physical quality of the product has to be above a certain minimum standard, otherwise the intellectual quality will suffer.

Relevance is an important characteristic of knowledge. Learning how to establish, say, nuclear reactors in Sudan or skyscrapers in Fiji may not be relevant to these countries. Obviously, the Sudanese nuclear engineer or the Fijian skyscraper constructor given a good educational programme, may become very skilful and make great contributions in another community. However, it would be considered peculiar if valuable and scarce human resources are devoted to teaching disciplines of no particular consequence to the national economy while relevant knowledge is not being communicated to students.

It is very important to note that a course of education could be of high quality, but irrelevant to, say, a student in Egypt; similarly, another course could be of low quality, and very relevant to Egypt.

There is a school of thought to which I subscribe, that higher education should be both relevant and of high quality. Education that has been relevant and of poor quality, irrelevant and of high quality or both irrelevant and of poor

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quality has led to so many negative consequences that an alert leadership would find this category of educational practices unacceptable. Such educational programmes pollute the education system.

The mechanics for sustaining quality and relevance

The quality and relevance of education programmes, and hence of teaching materials, are the product of elaborate dynamic processes. There are no fixed and immutable standards. A physics programme in 1890 would be very different from one in 1980. Yet a physicist in 1987 could recognize the quality of the 1890 programme, despite the revolutionary changes in the subject matter.

The setting of the quality of a programme and the determination of the relevance of its contents are in fact the by-product of the professional societies of each discipline as well as of the academic traditions of universities. The contents of a Bachelor of Arts programme—whether in biology, civil engineering, agriculture, history or logic—are determined to a considerable extent by the body of knowledge that the researchers in each field consider as constituting the discipline and as feasible to be taught to an intelligent student. Some universities have very demanding admission standards and provide a 'higher quality' education than other institutions.

In industrial countries a certain equilibrium has been reached: professional societies are highly developed and university professors are far more responsive to their professional peers than to university administrations. Thus in any one industrial country the quality and relevance of academic programmes (and teaching materials) are set within limits imposed mainly by the standards of the profession.

In these same countries, professional organizations are constituted by individuals employed in the national economy and responsive to the requirements of the world of work. Solid state physicists employed in the semiconductor/microchip industry, for example, bring their influence to bear on the education of physicists and electrical engineers. Similarly, open-heart and organ-transplant surgeons influence the teaching of medicine. These influences are transmitted through a complex system of channels. The scientific and scholarly societies legitimize knowledge and diffuse it. The academic members of these organizations produce the bulk of the teaching materials and induce the necessary curricular changes. Different universities carve different knowledge niches for themselves: some specialize in, for example, solid-state physics, others in high-energy physics. Both institutions may be of equivalent standing; and they are relevant to the community in different ways.

OECD and Comecon countries are very much on a par in matters of quality and relevance. One would expect that in science and technology it would be relatively easy to move between Moscow University, Tokyo University, the Massachusetts Institute of Technology, the École Normale or Stuttgart University. In other words, the notions of what is relevant and what is of an acceptable standard are 'common knowledge'. If this were not the case, it would not have been possible to exchange postgraduate students, post-doctoral fellows and visiting professors. Furthermore, all major professional societies and publications are international in character.

Thus in the First and Second Worlds a dynamic state of equilibrium has been reached. Some universities may be lagging behind by five or ten years, others may be ahead of what is considered to be the norm. Societies, individual professors, departments, publishers, ministries are constantly discussing, debating, proposing, preparing and publishing new teaching materials and discarding old ones.

It may be useful to stress that even in the First World there are social groups for whom relevant and quality teaching materials are inadequate: for example, the indigenous Americans and blacks in the United States, the Asian communities in the United Kingdom and the Eskimos in North America. In Canada the distance-teaching university of Athabasca, Alberta,

aims to serve some of the educational needs of Eskimos. The Association of Canadian Universities for Northern Studies and the National Polar Institute in Canada provide institutional frameworks for mobilizing and focusing interest on the North. The Canadian Ministry of Indian and Northern Affairs provides the political support to these research endeavours. Athabasca University thus is involved in a fairly extensive co-operation research programme that eventually leads to the production of relevant teaching materials for its students.

Quality and relevance in the Third World

In the Third World the situation is very different. Professional societies—even in the leading countries such as India and Brazil—have not assumed a sufficiently forceful role in the development and orientation of their disciplines to national needs. The marginal share of research and development (R&D) in the Third World (less than 10 per cent of world activity, and certainly a much lower share of front line research) has left the few Third World research professionals more integrated in the professional societies of industrial countries than in their own. Bandyopadhyay and Shiva (1980), writing about Indian science, show clearly that in the largest Third World community of R&D workers that numbered about 2.5 million in 1983, there was a strong isolation of individual scientists from their local community and stronger links and communication with Western scientists. Similar (if not more extreme) situations prevail in all the countries of the Third World.

Shiva and Bandyopadhyay (1980) find that the major factors which determine the choice of a research topic are dominated by opportunity for study abroad, visits to institutions abroad and the prestige of new fields rather than contacts with colleagues in India on scope or practical application. Relevance and quality are not determined by the deliberations of nationals within the framework of national professional organizations.

Scientists in Third World countries have made—and continue to make—considerable efforts to overcome this very disturbing condition. But the obstacles and difficulties are considerable. Scientific and technological research is very specialized, and in most Third World countries the number of workers in the same field is very small. Moreover, the annual output of publications in industrial countries is so large that Third World scientists can rarely resist being carried away. On the other hand, the applied sciences and technology of local relevance are often neglected and poorly financed. Furthermore, activities of local relevance are not adequately exposed to the national professional societies and their output is not integrated in the production of teaching materials.

The Third System

Besides the First, Second and Third Worlds, one may also speak of a 'Third System', that is neither at the centre nor on the periphery. The backbone of this system are the activities undertaken under the aegis of United Nations organizations, and international and regional institutions serving the Third World. Scientists, scholars, technologists and planners from the First, Second and Third Worlds participate in this system. We often forget how extensive this Third System is.

A large area of activity in the Third System is focused on agriculture, and occurs in substantial research establishments such as those in the Consultative Group of International Agricultural Research (CGAIR), in FAO programmes, in national centres and in a variety of activities funded by SAREC, IDRC or the World Bank. The Third System does not cover every area of science and technology equally. It is, however, very clear that between the International Centre of Theoretical Physics (ICTP) (Trieste), Unesco, the United Nations University in Tokyo, CGIAR, and the World Bank's Economic Development Institute a great deal of knowledge

of prime importance to Third World countries is covered.

The Third System however, has taken an evolutionary path that sets it apart from the traditional system for the production, dissemination, evaluation and application of knowledge. In fact, much of what is produced in the Third System never receives the standard critical assessment traditionally disbursed by professional societies, editors of professional journals or reviewers. The knowledge is not produced in a format that makes them easy to disseminate; and finally the reports and studies are often written for non-specialist bureaucrats.

In 1980/81, when I participated in the preparation of a *Study of the Efficiency of the United Nations System* (United Nations, 1981), I was struck by the enormous body of knowledge generated in the United Nations System and the difficulty of accessing this knowledge. In fact, it is difficult for a person within the United Nations System to have access to information about its activities. For individuals outside the system, prompt and efficient access is virtually impossible even though some agencies operate bibliographic bases (such as FAO's AGRIS, for example). A major recommendation of the efficiency study had to do with making the United Nations System more transparent and thus rendering the information that United Nations organizations generate more accessible.

The delivery system

In industrial countries academic communities have to be concerned solely with the problems of writing and preparing relevant and quality teaching materials. The production and marketing of this output is carried out by independent organizations (mainly private firms in OECD countries and state enterprises in the Second World). Commercial publishers and university presses offer authors a royalty on sales (usually about 10 per cent of receipts) and otherwise assume full responsibility for printing, publishing and marketing. The importance of a 'good' publisher is that he adopts high editorial and production standards, and provides an extensive marketing system. The economics of publishing are such that the only way to keep the quality of the materials high and the cost low is to have access to a large market. Introductory university courses enrol large numbers of students; it is therefore possible for a good textbook to secure a large market. The advanced textbooks naturally attract fewer buyers. Research monographs sell around 1,500 copies. But to sell 1,500 copies a publisher has to market worldwide.

English is almost a universal language: the United States, Canada, the United Kingdom, Australia and New Zealand are all English-speaking; they are also prosperous countries with many universities and university students. Since the scientific and scholarly output of these countries is also substantial, it stands to reason that they would have a well-established and flourishing publishing industry.

In Third World countries, there are already large numbers of publishers. Although the investment in printing machinery has been considerable, only a limited effort has been exerted towards improving editorial standards. Here the problem is the size of the market which makes it difficult, if not impossible, for a publisher (private and/or public) to cover the cost of providing high-quality editorial and production costs.

The Challenge

It is recognized today that there is no eternal, immutable body of knowledge that can be offered annually to students. A university system fully serving the diverse needs of its society has to be at the forefront of knowledge: researching, criticizing, analysing, synthesizing and transmitting knowledge. Developing countries to date have not been able to establish this type of university. Furthermore, it is clear that these universities lack the resources to support their professors to undertake research at the desired level or on the requisite scale. Furthermore, professional societies in developing countries

are weak, small and unable to play the expected role of orienting teachers and researchers towards socially and economically relevant objectives.

Consequently, much of the teaching materials now in use in Third World universities leave a lot to be desired. Young and vigorous faculty members very often adopt curricala and teaching materials to which they themselves had been exposed at leading universities in the First and Second Worlds. In this manner these professors feel that they have guaranteed the quality of their courses. Others hurriedly prepare lecture notes and textbooks. Since faculty members are often heavily burdened with duties and at the same time do not have access to good libraries, editorial staff, qualified secretaries and graphic artists, these textbooks rarely attain the desired levels of quality and relevance. Despite the notable progress registered in several countries, the Third World is still far from establishing suitable mechanisms and processes to reach students with relevant and high-quality learning materials.

Third World countries face unique developmental problems. The study of these problems calls for a very extensive range of educational materials. One of the greatest challenges that faces universities in the Third World is the articulation of the relationships between the world of learning and the world of work. Such an articulation calls for the development of new arrangements for the integration of the scholar, the scientist and the professional into the problems facing society.

The requirements of material for distance-teaching universities (DTUs) in the Third World are even more acute than for residential institutions. The material in DTUs has to be relevant and of high quality, and must be produced in a manner which facilitates learning at a distance: the material is practically all that the student really has. In a residential university the instructor and fellow students could provide some compensation.

Distance-teaching universities in the Third World face problems that are beyond their means to resolve. They need quality and relevant teaching materials for a start. Once such material becomes available, they then have to adapt them for local use. The only way to resolve these and other problems is to experiment and develop new, innovative co-operative arrangements.

It is necessary to mention briefly here that even if universally relevant teaching materials are available in one language, they may still have to be translated into numerous other languages. Furthermore, countries of the Third World are not alike; we cannot therefore consider the Third World as uniform in its requirements. For this reason, pragmatic arrangements have to be sought at the micro-level. There is no universal solution.

There is no lack of concerned scholars or professionals. The need is rather for the establishment of the requisite machinery to mobilize existing resources and talents, and to provide the process necessary to encourage the development of quality and relevant teaching materials and to share the cost.

Assessing available resources

Two categories of resources are central to our discussions: on the one hand, the production of relevant knowledge and, on the other, the publishing of the teaching materials in formats suitable for residential and distance-teaching systems. The production of relevant knowledge is extensive in the First, Second and Third Worlds as well as in the Third System. The weakness of the professional and scholarly organizations devoted to the problems of the Third World has led to the ineffective utilization of these rather disorganized resources. There is little doubt that the time is ripe for creative work in this domain. Various United Nations organizations and institutions alone, and in combination with aid agencies, could with ease transform the scene.

Obstacles and bottlenecks

The advantages of pooling resources, expanding markets and sharing in the production of teaching materials are obvious. There is much collaboration and co-operation between institutions and firms in the United Kingdom and North America. The British Open University (OU) pioneered the production of high-quality multi-media teaching materials. The United States was an obvious market for OU products. But a number of obstacles were soon discovered. For one thing the British course unit is much larger than an American three-credit course. For another, the Open University had achieved a considerable measure of course integration which is communicated to the student by various means. Thus the disaggregation of the teaching materials required considerable effort.

The International University Consortium (consisting of some thirty American and Canadian universities) was then established to share the effort and cost of adapting Open University teaching materials to North American requirements. But the issue of relevance does not arise to a great extent in a British/North American relationship. The British Open University has been involved with a number of other distance-teaching universities in the Third World, for example, the Open University of Sri Lanka which adapted its mathematics courses. Kaye (1979) identified two additional barriers to sharing distance-teaching materials made elsewhere: one barrier is institutional and the other is related to the specificity of high-quality instructional materials. The traditional processes underlying curricular and course development are not easily adapted to acquiring teaching materials made elsewhere or to co-operating with other institutions to produce such materials jointly. These obstacles and barriers are not, however, insurmountable.

But over and above these obstacles, universities in the Third World may face additional problems, such as foreign exchange control, state censorship on some literature, and inability to meet the high costs. There is little doubt that no one solution can be devised to fit all cases. A large variety of mechanisms have to be invented and applied.

Flexible and adaptive mechanisms

There are some 2,000 institutions offering distance-teaching courses and probably 4,000 or more post-secondary institutions offering residential education programmes in the world. There also exists a vast Third System with institutions, offices and staff worldwide, plus thousands of professional organizations in individual countries integrated together in considerable networks (e.g. the International Council of Scientific Unions (ICSU), the American Association for the Advancement of Science (AAAS), etc.). Given such a rich and varied 'base', it should be possible to establish a substantial number of alternative approaches.

It is taken for granted in this article that scientists, scholars and technologists in the institutions of the First, Second and Third Worlds are able, given the necessary support, to prepare much of the required teaching materials for high-quality relevant education. For this to take place it is necessary to increase scholar/scholar, professional/professional interactions in the Third World. It is only through such intensive contacts that the research policies, attitudes and orientations become integrated into the cultural life of the *different* communities.

The key factor in promoting and facilitating formal and informal interactions between professionals is to strengthen scholarly and professional organizations on the international, national, regional and subregional levels. The opportunities available to young scholars and scientists in the Third World to attend meetings and discuss their research work are very limited; in most places, the level of research activity is too low to support useful national professional conferences. Some 100 active and critical researchers are required in each narrow discipline to support an invisible college.

However, if the Third System combines its efforts with researchers in the Third World it may be possible to build up a critical mass in a large number of fields.

A professional conference, by definition, has to be an occasion where critical analysis is subjected to public debate and scrutiny. A professional conference should not be confused with a collection of public lectures. Although there is always a need for conferences which address broad issues, the majority of conferences should be highly specialized in very limited areas. A conference on infant mortality rates in city slums of the Third World could be meaningful while one on urbanization in the Third World would cover topics in such a general fashion that all hopes of critical discussion of facts and theory would be fanciful.

It is very likely that there are more than 100 senior researchers throughout the world working on such subjects as infant mortality in city slums of the Third World, camel-breeding in the arid zones, the management of human settlements in the arid zones, the economics of housing in rural areas of Africa and the role of bribes in decision-making with reference to public works. Thus, given the means, the creation of relevant invisible colleges in a large number of fields is feasible. A constructive strategy should aim at mobilizing these scattered resources and supporting the formation of invisible colleges.

An added advantage of developing international professional collaboration is that it brings together people working on similar problems. This could lay the foundation for collaborative projects to prepare teaching materials.

Developing the possibilities for international collaboration

The production of high-quality and relevant materials in and for the Third World is essential for two different reasons. First, the published monographs and papers would provide the necessary knowledge or the preparation of high-quality and relevant teaching materials. Textbooks in sociology, even if written in Arabic, discussing Chicago slums would have little relevance to a Cairo university student. Second, these same researchers who are able to study critically relevant problems and issues are the ones who could contribute to preparing high-quality teaching materials.

The process of establishing effective co-operation between institutions depends to a considerable extent on the ability of their staff to view a topic from a common standpoint, to evolve compatible styles and to be able to work together to an agreed level of quality and an agreed timetable.

It is difficult to establish co-operative teams in the Third World. The difficulty is caused by a lack of adequate working knowledge about people, about working conditions and sufficient familiarity with high-quality materials to be able to define at the outset the orientation and quality of the desired output. Much could be done to reduce the effort required to achieve desired goals.

The organization and economics of the dissemination of knowledge

In industrial countries a complex system has evolved for disseminating knowledge once it has reached the typescript stage. A large number of publishers take over the typescript after they have assured themselves that it meets editorial standards. The publisher processes the typescript by polishing the language, standardizing the style and getting the book printed. Many publishers sub-contract these mechanical activities. With the advent of the computer, the importance of these operations is shrinking. The bulk of the work of a publisher takes place before and after the book is printed. Making a book known to the interested public (i.e. marketing) is an important function of the publisher. This involves having the book reviewed in the appropriate periodicals, placing information on the publication in bibliographical data bases and having the book displayed in

appropriate bookshops. Salesmen and agents are involved in this activity.

Naturally, the cost of a research project is far greater than the cost of publishing a book. Yet, few publishers would consider a title for publication unless they are certain that the book will sell sufficiently to recover the cost. The cost of publishing 1,500 copies of an average monograph is of the order of $9,000 to $11,000. It is not easy to sell 1,500 copies of a specialized monograph; hence, the importance of worldwide marketing.

The production of high-quality distance-teaching materials (at British Open University level) is far more expensive because the cost includes the design of the curriculum and course, the author's fees, the remuneration of reviewers and assessors, and the tremendous effort devoted to the presentation of the final product (use of graphics, language, layout, style, etc.). When television, radio and laboratory kits are utilized, the cost of preparing a course become even higher. Economies are made in distance teaching where the number of students enrolled per course is large. Only when these numbers are in the thousands will the cost per student come down below that of an equivalent quality residential university. The preparation of teaching materials is the major cost item in distance teaching. Once this cost is shared by, say, 10,000 students the system becomes economically competitive with residential teaching. The high cost of material preparation has been a bottleneck in the expansion and improvement of distance teaching in the Third World.

A starting point

It is possible to envisage a large variety of ways of doing something practical and tangible about improving the quality and relevance of university-level teaching materials. At this point we have to assume that there are enough individuals and institutions interested in addressing the problem of quality and relevant teaching materials. Substantial specialized research work and discussions are still needed to examine a variety of issues. Some of these issues may be cited here for illustrative purposes. Can the teaching of the basic sciences in developing countries be based fully on materials from the First and Second Worlds? It would be reassuring if this matter were carefully and thoroughly examined by pedagogists, scientists and educational pyschologists.

The applied sciences and technology offer a complex range of problems. Obviously a nuclear engineer from the Third World must receive an education similar to a fellow engineer in the USSR, the United States or France. However, a civil engineer going into the construction of houses in, say, Yemen would be ill-advised to adopt European or American technology blindly. Sociology, economics and management sciences are also fields that call for culture-specific teaching materials. Other questions that would have to be studied are, for example: Is it necessary to develop self-contained programmes for China, Brazil, the Arab world and Indonesia? Is it possible to agree on core programmes that are universal and then on a set of components each of which is particularly relevant to a particular region?

I shall discuss only three possible starting points. The reader should be able to add new ones and permutate the proposed initiatives. I have combined a possible set of initiatives into three categories:

PRODUCERS OF KNOWLEDGE INITIATIVES

Here we would assume that two or more of the following categories of institutions would co-operate: the United Nations University, the International Centre for Theoretical Physics, the Third World Academy of Science, the International Council of Scientific Unions, the Continuing Committee on the Role of Scientific and Engineering Societies in Development (supported and led by the American Association for the Advancement of Science). Representatives from a small group of these institutions

could meet and arrange to sponsor different programmes designed to examine curricula and available teaching materials; they would then develop curricula and commission the preparation of desired materials.

Cumbersome and heavy bureaucracies stifle creativity and obstruct initiative. In time, the efforts deployed by diverse groups could begin to coalesce.

PUBLISHERS' INITIATIVES

Major publishers in the First, Second and Third Worlds could also initiate the mobilization of institutions and authors to prepare teaching materials. Here, enterprising publishers could enter into a variety of joint ventures to share costs, expand markets and overcome structural obstacles such as foreign-exchange problems. For example, it is easy to envisage a project involving a European publisher, an international aid agency, universities in two or three countries and an equal number of Third World publishers who would co-operate to produce teaching materials for a B.Sc. programme in agriculture or a B.A. programme in education. The original text may be prepared in English, then translated into Spanish, Urdu and Arabic. Local publishers may have undertaken to publish and distribute within their national borders. However, since the European firm has a global marketing system it would undertake to market the products worldwide. All the relationships and legal arrangements required are fairly well known and should pose no serious problem to a sufficiently large publishing firm.

A UNITED NATIONS ORGANIZATION INITIATIVE

Several United Nations organizations (Unesco, the World Bank, FAO, UNIDO, ILO) are major publishers as well as major initiators of relevant research projects. They receive substantial sums of money from UNDP, aid agencies to finance this research. Thus in theory, all the basic components are present in one single organization. This situation confers on them unique opportunities and responsibilities. No United Nations organization can, however, offer a complete solution to the problem. Each organization can take the lead in either initiating or participating in a serious effort to push things in the right direction.

Here, it is possible to envisage a business relationship between a United Nations agency, commercial publishers, state enterprises and universities in the Third World. Again, the economics of publishing are so well known that it should be possible to establish satisfactory relationships that would safeguard the interests of the authors, the organization, the publishers and the users.

The international market for teaching materials runs into tens of billions of dollars annually. Although there are giant publishers with global markets, the success or failure of each publisher depends on producing and marketing products to tens of millions of users. The existence of this vast machinery for converting a typescript into a book is vital to the education, research and knowledge industries. One of the difficulties faced by Third World countries is the weakness of the activities that digest, criticize, process and market knowledge. The production of quality and relevant teaching materials is dependent on the systematic and patient development of all the components of the knowledge industry. ■

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Distance education and computer-assisted communication

France Henri

Interactive communication represents a form of exchange to which great value is attached in contemporary educational trends. It is a method of presenting and acquiring knowledge advocated by a number of theoreticians in order to promote effective learning processes. Distance education has not remained isolated from this educational trend, in which interaction is regarded as an essential component of the educational process. Although the traditional media used in distance education generally speaking offer no more than minimal opportunities for communication between students and teachers, systematic efforts have been made in order to simulate interaction in presenting the content of courses, even within educational texts (Landry, 1985).

In his theoretical essay on distance education, Holmberg (1986) proposes that the content of teaching materials be developed in the form of a 'guided didactic conversation' comparable to the dialogue which the teacher would engage in with his students. He maintains that simulation of the conversational mode in presenting the subject of study has a positive impact upon success rates and upon the degree of satisfaction experienced by students. This manner of formulating the course of instruction aids understanding and makes distance learning a dynamic and stimulating experience. The student working in isolation feels he or she is being personally addressed and invited to take part in the simulation. The result is a greater degree of motivation to study, and the development of a sense of community and identification with the other students who are also following the same course.

Mediated distance education, designed as a simulation of interactive dialogue, may prove to be an appropriate method of presenting and acquiring knowledge. However, such a method would not be complete unless some system of supervision were added to it which affords the student the opportunity to establish a personal form of communication. Group meetings, telephone calls and correspondence by post all enable students to enter into contact with their tutors and with one another. During these activities, the tutor is able to monitor progress in the learning process, and can intervene when necessary to help a student in difficulty.

The importance of these supervisory activities warrants particular emphasis here, in view of the decisive impact which they exert on students' success rates. It has been demonstrated that increases in the persistence and success rates, and reductions in the failure and drop-

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out rates, are largely determined by the frequency and calibre of educational follow-up activities (Kaye and Harry, 1982). In practice, the tendency is to limit such activities in support of the learning process, as they generate substantial costs which, if they were not contained, would pose a threat of the economic viability of distance education. The economic constraints which prevent distance learners from being given frequent opportunities for interactive exchanges represent, from the teaching standpoint, a problem that does not always admit of an easy solution. They can be successfully circumvented by means of comprehensive teaching materials, designed in the form of a personal dialogue and organized in such a way that the student has the impression of being guided and accompanied throughout his or her period of instruction.

In its present form, the dynamics of distance education is thus based essentially on the personal motivation and self-reliance of the student who, like any 'teach yourself' student, learns on his or her own. However, the development of the new information technologies and their rapid penetration of several sectors of activity enable us to envisage promising solutions to the problems of isolation and remoteness. Already a number of higher education establishments in North America and Europe are using these technologies as the main medium of distance education, or as an adjunct to distance instruction disseminated by means of the traditional media. In several cases, use of these technologies is still at the experimental stage. Numerous obstacles have to be overcome before more widespread use can be made of them; for example, a better understanding must be acquired of the educational characteristics of the information technologies; methods for the training of users must be developed (for students, teachers, tutors, counsellors, curriculum designers); the hardware must be made easily accessible and all the technical complications that render it 'unfriendly' to the non-specialist user must be ironed out. Despite such teething problems, which are not unusual in introducing an innovation, the idea persists that the obstacles now standing in the way will, in the near future, be overcome.

Information technologies, interactive technologies and distance education

The expression 'information technologies' refers to the computer-based technologies which enable various categories of users to be provided with information and data-processing services. Data banks, data bases, videotext, teletext, electronic mail, computer-assisted conferencing, electronic transactions are so many different applications of these information technologies. Generally, they are linked to the use of telecommunications networks and transmission infrastructures (telephone networks, satellites, radio, etc.) in order to make the information available to users living at some distance from the processing centres. The operations of information retrieval and consultation and of data-processing are performed interactively in the form of a dialogue between user and machine. (The combination of information and telecommunication technologies is termed 'IT'.)

SELECTIVE AND FULL INTERACTIVITY

Information technologies may be divided into two main groups: those involving selective interactivity and those involving full interactivity. They are distinguished by their level of interactivity and by the source of information.

In the first group are to be found all those technologies that store information in an already structured form so as to make for easy access and consultation; they include, for example, data banks (ASCII, NAPLPS), data bases, teletext, electronic transactions and teleshopping, etc. The user locates the desired information by using different retrieval procedures based, for example, on keywords, the combination of descriptors, hierarchical or

tree-structure classifications, etc. The information supplied by these technological systems is necessarily limited to the data stored in the host computer. Generally, the user cannot add further data or modify the data disseminated; this privilege is reserved for the information suppliers. These technologies thus operate in the interactive mode through selective choice, and information is a service that is provided; users are not permitted to make information inputs that could subsequently be distributed.

The possibility of access to large volumes of information stored in data bases and data banks opens up new horizons for distance education. Course designers will be able to direct students to these documentary sources, encouraging them to draw form such sources the information needed to supplement the basic course materials. Having direct access to such banks, which are constantly being added to and updated, students will be able to make information choices that correspond to their own personal needs and interests. It will be possible for them to acquire a type of training that is more relevant to their aspirations and expectations. In addition, such technologies will enable distance-education establishments to free themselves from the need to provide students with voluminous printed documentation, and hence from the constraints of postal service or private courier deadlines for delivering course materials.

The second group of technologies comprises all forms of computer-assisted communication (CAC): electronic mail, computer-assisted conferencing, asynchronous communication, synchronous communication, users' directory, vote tabulator and the organization and sorting of messages in a conference. In contrast to the technologies of the first group—which structure services and undertake their dissemination—those comprising the second group serve essentially as a vehicle for the information which users transmit to one another in the form of messages that can be addressed to one or more users simultaneously. During such exchanges, a fully interactive communication process is established between two persons or within groups set up in the form of electronic colleges or communities. The information circulating within such groups is not necessarily supplied but rather developed by the users. The first CAC system, the Electronic Information Exchange System (EIES), was developed in the United States by Murray Turoff's team for the purpose of exchanging and pooling information, organizing discussions and group work, and facilitating the decision-taking process (Hiltz and Turoff, 1978). The results of the first experiments in using CAC demonstrate that this method of exchange fosters dynamic communication and productive social interaction within the electronic communities (Kerr and Hiltz, 1982; Hiltz, 1985).

Within the spectrum of information technologies, CAC must be considered a most promising mode of communication for distance-education purposes. It makes direct exchanges possible between two or more students scattered over a wide geographical area, and provides them with a common working and discussion environment. Recourse to this technology will enable students to break out of their isolation and to enrich their learning environment through genuinely interacive dialogue. They will have the opportunity to make their voices heard, to raise questions, express needs and opinions and above all to compare notes and opinions. In addition, they will have to acquire a mastery of writing and reading skills, which are essential in order to make appropriate use of this communication medium. It may be hoped that, if they derive benefit from the more detached perspective afforded by writing, students will develop in the course of using this technology a greater awareness and a better command of the learning processes that they employ. CAC makes it possible to envisage the advent of a new interactive communication dynamic in distance education, and to provide students with greater opportunities for self-expression.

CAC IN DISTANCE EDUCATION, OR INTERACTIVITY REGAINED

Computer-assisted communication is a technology or medium whose characteristics meet the criteria of accessibility, interactivity and flexibility of use so urgently sought in distance education. The student has merely to have access to a terminal or to a microcomputer equipped with a modem linked to a telephone network in order to be able, whenever he or she considers appropriate, to take part in discussions and to communicate rapidly with the tutor and with other students, without any limit in time or space. The teacher or tutor, who is thereby placed in direct, frequent contact with students, will be able easily and promptly to adapt the content of the course to match the particular features of a given group and to meet the individual requirements of each student. It may reasonably be hoped that such close contact will raise the standard of educational communication by providing all participants in the distance-education process—students, teachers, tutors—with new, permanent 'forums' of exchange and interaction.

Many educational applications of CAC can be imagined as, for example: (a) replying to queries and requests from students regarding course content; (b) providing advice and guidance; (c) helping students to solve problems in understanding the subject-matter of a course; (d) serving as a medium of transmission for sending in homework and returning test papers; (e) discussing projects and work with the tutor; (f) bringing students together in accordance with their interests and their needs; and (g) encouraging team projects and setting up self-help groups. Not all these possibilities have yet been tried out, as research and experimentation in this field are still in their early stages.

We do not have a great deal of data on the educational value of CAC. Research findings do not point conclusively to its superiority for educational purposes over other media, or to any higher rate of economic return in comparison with the more conventional media of communication such as the telephone, the post and face-to-face meetings. However, schemes for introducing CAC currently being carried out in several educational establishments are gradually bringing out the advantages of this medium from the teaching standpoint. The first experiments conducted tend to confirm the hypothesis that the electronic environments created by means of CAC may generate new ways of designing courses and new forms of distance learning. Experiments conducted in Canada (Brochet, 1986; McCreary and Van Duren, 1987; Harasim, 1987; Davie, 1987), the United States (Hiltz, 1986, 1987; Bissell et al., 1987; Haile and Richards, 1984; Richards, 1987) and in the United Kingdom (Kaye, 1987; Mason, 1987; McConnell, 1987) are eloquent enough on the subject of the medium's potential. The results obtained tend to prove that CAC is able to facilitate co-operative learning schemes and the formation of self-help groups; that it fosters more active participation on the part of students than is observed in the classroom, and that students by and large register a high level of satisfaction. It can also be seen in some cases that the drop-out rate is lower than that generally recorded in distance education (Haile and Richards, 1984) and that students give proof of greater motivation (McCreary and Van Duren, 1987). In most experiments, stress is laid on the fact that the use of this technology calls for a new approach to the organization of curriculum content.

The reports on these experiments, which are on the whole positive, also refer to the difficulties of an economic, technical and educational nature which are involved in the use of CAC. Recourse to this technology risks being discriminatory from the economic standpoint inasmuch as it entails extra expense for the student, who is obliged to bear the cost of the purchase or rental of a terminal and to cover the telecommunications costs (Bates, 1986). These additional expenses to be defrayed would limit its accessibility to students and there would be a danger that it remained the preserve of the economically privileged groups. Moreover, the technical problems encountered by students in

establishing telecommunication links may prove to be a major handicap. Whether as a result of breakdowns in the communications infrastructures or of an inadequate knowledge of the software and hardware, the technical pitfalls serve to increase the risks of failure and loss of motivation on the part of students. In order to iron out such difficulties, it is essential to be able to provide the necessary hardware and to make available to students a distance-operated technical support service. From the teaching standpoint, the tutor or teacher—who acts as organizer or leader of the electronic exchanges—must develop special skills in order to be able to conduct the discussions and the other activities available to the students. He must be able to handle or 'manage' the messages, guide interactions and help the group to attain the objective it has set itself, at the same time paying particular attention to the progress made and the reactions of the students considered individually. The students for their part must show assiduity in keeping abreast of the group's progress and discipline themselves as regards their participation, something that is not generally required in distance education.

Notwithstanding the problems entailed by the use of this new technology, it may reasonably be supposed that the networking of teachers, curriculum designers, tutors and students will open the way to constructive and creative dialogue, extending the opportunities open to each participant to have an active say in the process. The result might be a wholly original method of disseminating knowledge, one that the traditional media will find it difficult to incorporate.

Towards a third-generation distance-education model

The paradigm of multimediated distance education has been formulated on the basis of principles of responsiveness, democratization and accessibility of education (Henri and Kaye, 1985). The educational and organizational models put forward have won free from the notion that face-to-face communication constitutes an irreplaceable source of exchanges, one indeed that is essential for the transmission and acquisition of knowledge. It is thanks to media penetration in all sectors of activity that it has been possible to organize mass education schemes, available to everyone, through the use of flexible formulae for the dissemination of courses of instruction. The use of the media and of communication technologies in distance education has thus developed in support of a vision of education predicated on the students autonomy and on the need for him to assume responsibility for his own training. Applied to distance education, the information technologies might also serve as media for these values.

According to Shapiro (1987), the integration of CAC into distance education has recently given birth to a 'third-generation' model. The first- and second-generation models correspond respectively to correspondence courses and to distance teaching that makes use of the traditional media. The essential features of these two models are the relatively slow, scattered and limited nature of the interactions involved; the essentially individual nature of the learning procedures, in which the student assimilates knowledge by making use of the instructional and supervisory resources made available to him; and the limited role assigned to truly interactive communication (occasional face-to-face encounters and telephone calls).

The third-generation distance-education model adds to the first two the permanent possibility of interactive communication in synchronous or asynchronous mode. Thanks to CAC, which links together students, tutors and teachers in a fully interactive process of communication, the third-generation model can cater to the need for training courses that are no longer conducted purely on an individual basis. It makes it possible for group training approaches to be worked out, in which the learning process is sustained by the dynamic of the social processes involved. The distance learner can now choose an individual approach

to training, or he or she may opt to take part in group learning schemes that are developed through the ongoing process of interaction. ■

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The economics of mass distance education

Greville Rumble

There is a belief that distance education is cheaper than traditional forms of education. What is usually meant by this is that the cost per student and/or per graduate is less than in traditional forms of education. Since students can progress at different rates (either full-time or part-time), the cost per student is often expressed in some kind of standard measure such as the cost per student-hour or cost per full-time student equivalent.

It is not always easy to compare the costs of distance and traditional systems. They may have different objectives; they may teach different subjects, or the same subjects in very different ways; the previous educational qualifications of the students entering the systems may be different, and this may affect their success in producing graduates; and the quality of the teaching may be different. Any one of these variables may affect costs and the way we view them. Generally, however, cost comparisons are confined to institutions teaching at the same level (primary, secondary or tertiary) and the assumption is made that the quality of the education offered is similar.

Of course, distance-education systems are not set up just because they are believed to be cheaper. However, cost is an important factor, and those responsible for their establishment rightly point out that they can be cheaper. The organizing committee of the Venezuelan Universidad Nacional Abierta stated its belief that the institution would 'contribute in significantly reducing the annual cost per student and the social cost per graduate' (COUNA, 1979). The Andhra Pradesh Committee on the Establishment of an Open University (1982) cited evidence drawn from early cost studies of the British Open University to the effect that the average recurrent and capital cost per student in the latter was less than that found in conventional British universities, and implies that the foundation of a distance-teaching university in Andhra Pradesh would be cheaper than any alternative course of action open to the state government.

Unfortunately the hopes of politicians and planners are not always realized. There are examples of distance-teaching schemes where the cost per student or cost per graduate, and sometimes both, have been higher than costs in traditional systems doing comparable tasks, just as there are plenty of examples of distance-teaching systems which have been cheaper (Perraton, 1982).

The cost structures of distance and traditional education are so different that those setting up distance systems experience considerable difficulty in describing the operation and economics of their institution to officials in government and funding agencies (Snowden and Daniel, 1980).

To understand why this is so, and why distance systems may be both cheaper and more

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expensive than traditional ones, it is necessary to have some knowledge of the way educational costs behave.

The basic cost function

The total costs of an enterprise are made up of both fixed and variable costs. Fixed costs do not vary continuously in relation to changes in volume of activities, although they may change if activities are ended or if there are very significant changes in volumes. (What is a significant change in volume needs to be defined within the context of the enterprise.) Variable costs tend to increase or decrease directly (linearly) with fluctuations in the volume of activity.

The basic cost function for any educational system is

$$T = S\Omega + C\delta + P\pi + F$$

where T is the total cost, S is the number of students, C is the number of courses which are being developed, P is the number of courses being presented to students, F is fixed cost of the system (administrative costs and other overheads), Ω is the direct cost per student, δ is the direct cost of developing a course, and π is the direct course-related cost of presenting a course. The total direct cost of teaching students is $S\Omega$, the total direct cost of courses in development is $C\delta$, and the total direct cost of courses in presentation is $P\pi$. The variables for which volumes of activity are identified here as being of significance are S, C and P. There may be others which are of importance in particular distance-education systems: for example, the number of local study centres at which teaching takes place. However, the model used in this article ignores the influence of other variables. All the costs on the right hand side of the equation are dependent on management choice.

In distance-education systems, student-related costs include the costs of materials supplied to students, the costs of distributing materials where these are sent to each student, the costs of paying tutors to mark students' assignments and examination scripts, and the costs of any face-to-face tuition. Obviously, the cost per student goes up if one gives students more rather than less material, while the cost per student of tuition, for example, will vary depending on the amount of tuition given and the student/tutor ratio.

The direct costs of developing a course will include labour costs (payments to authors, editors, designers, broadcast producers) as well as the development and production costs of producing 'master copies' or prototypes of course materials (for example, payments to consultants, payments for rights, cost of editing broadcasts and preparing master tapes, etc.). The way a cost behaves can be changed by management decision. The cost of producing copies of the materials which are given to the students is a direct student cost, while the cost of producing a stock of materials which one lends to students while they are registered on a particular course is a direct course cost. For example, if one gives students the video-cassettes associated with a course, the cost of this copy is a direct cost which is incurred for each student; if one has a stock of video-cassettes from which one loans a copy to each student, then the cost of the stock of copies is a direct cost of the course.

The direct course-related costs of presenting a course includes such items of expenditure as the cost of transmitting broadcasts associated with the course, re-writing examination questions, monitoring the course, and generally updating and clarifying the materials.

Overhead costs are more or less self-evident, covering the costs of management functions (personnel, finance, management services, administration, institutional planning and evaluation, etc.). The more sophisticated the management and control system, the greater these costs are likely to be. Overhead costs may also include an allowance for the replacement of capital (studio and transmission equipment, computers, etc.), all of which will in due course wear out and need to be replaced. There are a number of ways of treating capital costs, but for

practical purposes what is really important is the cost to the enterprise of replacing the capital item when it is worn out with a new item which will fulfil a similar function.

The use of media and the problems of managing distance-taught students means that the overhead costs of the institution (F), the costs of developing a course (δ), and the course-related costs of presenting courses (π), are in general higher in distance teaching institutions than in traditional institutions with comparable student numbers. However, the relatively limited amount of support given to students means that the direct cost per student (Ω) is lower. This is because much of the managerial and academic effort of the institution is being put into the development and maintenance of educational materials and administrative systems for the control of distance students. This then represents a form of capital investment which replaces direct student-teacher contact, and which can be used to teach many times the numbers of students that can be catered for in such traditional forms of education as the (face-to-face) lecture, seminar and tutorial. In essence, capital replaces labour, offering to educationists what Wagner (1982) described as 'a mass production alternative to the traditional craft approach'.

The extent to which fixed (capital) costs can predominate in distance education was shown in a comparative study of the costs of courses at conventional British universities and at the distance-teaching Open University: whereas the ratio of variable to fixed course costs at conventional British universities was about 1:8, at the Open University it was about 1:2,000 (Laidlaw and Layard, 1974).

The costs of developing, producing and distributing course materials

A particular feature of distance-education systems is the level of investment required in the system before a single student can be enrolled. The investment in capital items (buildings, equipment, etc.) can be considerable, particularly if studio-based technologies and satellite or terrestrial broadcasting are used, and these facilities have to be built, as opposed to being hired as required. Use of computer-based technologies for teaching and administration also adds significantly to cost. Provision needs to be made for the warehousing and handling of course materials, so warehouses may have to be built and will certainly need to be equipped to meet the institution's needs. Additional costs will be incurred if it is decided to set up an in-house print shop rather than use existing commercial printers.

A range of course materials sufficient to meet the academic objectives of the institution and provide potential students with an element of choice has to be designed and produced. The most significant cost here is likely to be the cost of the academic and related staff required to develop the materials. Sparkes (1984) has suggested that whereas it takes from 1 to 10 hours of staff time to develop one hour of small group teaching, and from 2 to 10 hours to prepare a one-hour lecture, it will take from 3 to 10 hours to prepare one hour of tutored video instruction (TVI), 50 to 100 hours to prepare a teaching text which will occupy a student for one hour, 100 hours or more to develop a 'broadcast quality' 60-minute television programme, 200 hours or more to prepare one hour's worth of computer aided learning, and 300 hours or more to prepare one hour's worth of material on interactive videodisc.

These figures need to be treated with some care. Broadly speaking, there are four approaches to the creation of distance learning materials. The first of these is to look around for some existing material which can be used either as it stands or in adapted form to meet the needs of distance-taught students. It is quite common, for example, for an institution to recommend certain textbooks to its students, which they are then required to buy in order to take the course. Obviously, this vastly reduces the costs of the institution, which then only has to prepare a few notes of guidance and some assessment questions in order to begin teaching. This approach involves hardly any creative effort on

the part of the teaching institution, and is a very cheap way a proceeding. It is used by some commercial correspondence colleges preparing students for professional and other examinations. It rarely produces good self-instructional teaching materials, but it does allow a wide range of courses to be developed at very little cost. It is also used in a modified form in some high-level Open University courses, where the amount of self-instructional materials produced to support student learning is limited.

The second approach is to 'tack' the distance-teaching system on to a conventional teaching system by video-recording lectures given to conventional students and preparing lecture notes to accompany the videos. The lecture notes can be reproduced (in modified form) lecture hand-outs, examples written up on blackboards, flipcharts or overhead projector acetates, photographic slides, etc. Once lecture theatres have been equipped with video cameras and recording equipment, the additional per capita costs of preparing videos and lecture notes for use by off-campus students can be very little, as Wagner (1975) showed in respect of the off-campus graduate engineering programme at Colorado State University, and Leslie (1979) demonstrated in respect of the University of Waterloo Correspondence Program. A vast library of video material can be built up rapidly for relatively little total cost. While the quality of these videos may not be very high, they are adequate for their purpose. Broadcast by satellite, they can enable students spread over very wide geographical areas to 'listen into' lectures providing up-to-date information on technological advances. Students may also be able to participate in the lectures through telephone links (tutored video instruction, or TVI). Such approaches are now being used by a number of universities including the National Technological University in the United States.

Both the third and fourth approaches are based on the development of special self-instructional materials (print, audio-visual, broadcast, etc.) designed to teach distance students. There is little doubt that the quality of specially designed and produced distance teaching materials can be very high indeed.

The third approach is to plan the curriculum and to specify course content in broad outline, and then appoint academic consultants to develop the written materials and scripts for broadcasts and audio-visual materials. This kind of approach was adopted by the Universidad Estatal a Distancia in Costa Rica. It has the great advantage that payment is by results. The academics are not permanent members of full-time staff, so there is no long-term commitment to train them, provide them with time to undertake research, deal with staff problems arising from low productivity or obsolescence of knowledge relative to institutional needs, etc. Curriculum planners specify the aims, objectives and broad content of new programmes of study, and academic editors and educational technologists turn the consultants' drafts into finished products. If the authors fail to deliver the goods, they do not get paid. Advance notification of a course may be given, but sometimes (as at the Open Learning Institute in British Columbia), a course is only announced after all the materials have been handed over for production. The process has more in common with a publishing house than a university. Commercial correspondence colleges which create their own materials use consultants because this is obviously a relatively cheap and flexible way of employing academic course writers and broadcast and audio-visual producers. The cost of employing an author on contract can nevertheless vary, depending on 'supply'. In some countries or in some subject areas suitable authors can be hard to find and they may command high fees.

The fourth approach is to employ a core of full-time academic staff to create the course materials. Such staff may be appointed on permanent or temporary contracts. Where the appointments are permanent, the staff need to keep themselves abreast with their subjects areas, hence they need time off for study and possibly research. After a time, permanent staff may acquire many of the skills of instructional designers and educational technologists. Unlike temporary staff, they are not always looking

towards the next job, but bad appointments may become a long-term liability, particularly in systems where there is tenure.

The total salary bill also depends on how the academic staff are deployed. Institutions such as the Open University, Athabasca University in Canada, and Deakin University in Australia, which have adopted a course team approach (in which groups of academic and technical staff work together on a project team to develop a course) need higher levels of staffing than those that require the staff merely to stick to their own specialist task. On the other hand, while the course team approach is expensive in staff time and hence pushes costs up, it does enable staff to work in a very creative environment. Of these four approaches, the first is the cheapest and the last the most expensive.

A further factor to be taken into account in considering the cost of the course development, production and presentation system is the choice of media. Here again, management choice can greatly influence the cost of the system.

We have already noted Sparkes's contention that the time required to develop material designed to serve one hour of student learning varies significantly depending on the choice of media. The costs of developing the material are, however, not the only costs. Printed material needs to be designed, edited, typeset, printed and distributed; video and audio material has to be disseminated through appropriate channels and received on appropriate equipment; computer-based systems require extensive equipment and access to networks, as well as a great deal of investment in software.

To take the case of print, all material will require editing and design work. The cost of editing an author's manuscript into a form suitable for a self-instructional learning package is likely to be greater if contract authors are used. The cost of design can vary significantly, depending on the extent to which illustrations and artwork is incorporated into the text. The way the text is set affects costs. Offset lithography from typed originals is generally cheaper than letterpress printing from hot-metal type. Use of word processors instead of typewriters makes the preparation of camera-ready copy even easier, and can affect authoring costs. Timmers (1986) reckoned that the use of word processors at the Vancouver-based Open Learning Institute cut the time taken to develop and prepare for production a page of text from 120 hours to 50. On the other hand, where texts have to be handwritten, costs can escalate. The Allama Iqbal Open University pays its calligraphers on the same scale as university lecturers. Some institutions, such as the Sri Lankan Open University, prepare their texts in more than one language, thus incurring the costs of translation. The costs of printing can also vary. Paper costs differ from country to country; different grades of paper may be used; and the costs of printing change depending on the method used. The costs of the offset litho process are affected by whether paper or metal plates are used. The former are cheaper but are good for only about 500 copies. The use of colour adds greatly to the costs of printing. Variations in distribution costs can be so significant that it is difficult to make generalizations, but obviously it depends on whether the materials are mailed direct to individual students' homes, as happens at the British Open University, or are dispatched to local centres for collection by students, as happens at the Universidad Estatal a Distancia in Costa Rica. Finally, printing costs are susceptible to economies of scale. The length of the print run makes a great deal of difference to the unit cost per title. On the other hand, where more than one year's stock is printed, the costs of storage will also need to be taken into account.

The production costs of video vary enormously too. The cost per hour of video-taped lectures is much less than broadcast-quality television. The latter is expensive for a number of reasons. The cost of equipment to produce broadcast-quality television is greater than that required to produce video. Broadcasting unions in some countries have pushed the rates of pay to very high levels, and in many cases this has been coupled with agreements on staffing levels which have also exacerbated costs. What constitutes broadcast-quality television is also sub-

ject to different standards. In the United States the Public Broadcasting Service broadcasts three-quarter-inch Lo-band Umatic tape generated material, which is cheaper to produce than the three-quarter-inch High-band tape material used by the television companies in the United Kingdom. It is perfectly feasible to produce 'broadcastable' educational material at low cost. The National Technological University, for example, broadcasts low-cost video-tape lectures by satellite which is perfectly adequate for its purpose.

The distribution costs of video can also vary significantly, depending on whether video-cassettes or terrestrial or satellite-based systems are used (the latter encompassing both direct broadcasting by satellite (DBS) and satellite to cable head ends), and the extent to which the distance-education institution is responsible for meeting the capital costs of the distribution system or has access to transmission time at economic or marginal costs. In general, television is an expensive medium and cannot be justified in circumstances where the basic infrastructure to support it (maintenance services and trained manpower) are lacking or a significant proportion of homes are not equipped with television sets (Eicher et al., 1982). The costs of home-based video systems, in which individual students are expected to equip themselves with video players and either record off-air or play cassettes which have been provided by the teaching institution on loan or for purchase can also be significant. The Open University found that it was cheaper to give each student a 60-minute video-cassette than transmit over the air provided that there were fewer than 133 students on the course. Between 134 and 233 students it was cheaper to loan a cassette to each student, paying the costs of postage each way. Over this level, it was cheaper to transmit once using the national television channels of the BBC. These cross-over points were obtained using cost-volume charts and, of course, apply only to the situation and costs in the Open University at the time the study was undertaken (1984). However, selling the cassettes to students merely puts increased costs on them. Video-cassette recorders can, of course, be installed in local centres with students accessing cassettes from a library of tapes held at the centre. The overall costs of such a system will be lower but there are drawbacks, not least, the needs for the institution to maintain the equipment, ensure its safe-keeping, and provide sufficient players and quiet rooms so that students do not have to wait too long to view the cassette of their choice, and for students to travel to the centre at times when it is open.

Radio and audio-cassettes have the advantage that they are relatively cheap, and audio-cassettes can be used in imaginative ways with printed material to provide an audio-visual element. Eicher et al. (1982) were nevertheless sceptical about the cost-efficiency of radio in systems with under 2,000 students, while the Open University found that for courses with under 1,000 students, it was cheaper to provide audio-cassettes to each student rather than transmit radio programmes over the air.

The comments on the use of cassettes versus over-the-air transmission relate to costs and not to the educational effectiveness of the two modes of distribution. There is little doubt that distribution by cassette or systems where students record off-air onto cassette are educationally more effective since students can replay, as well as stop and start, the cassettes at will.

The costs of computer-based systems have been insufficiently studied to date, but the experience of the Open University, which has some 75,000 students taking degree-level courses, has been that the cost of providing each student with a personal computer is such that the institution itself cannot hope to fund the project. Even if the University restricted itself to providing computers to students taking courses where a significant level of computing is deemed to be academically essential, it would quickly have to provide for the needs of at least 13,000 students. A machine which meets the needs of the University (basically MS DOS operating system, 512K memory and VT 100 communications capability) costs in the region of $900–1,000 at 1987 prices, so the University cannot afford to equip students with

personal computers. In view of this the University has recently instituted a policy under which it hopes that students will either buy the machines outright at a negotiated rate of discount, with or without a bank loan, or hire them from the University at a rate which still makes student purchase an attractive option for those students who can foresee the need to have a machine for several years.

The problem of student variable costs

Another factor which affects the costs of distance-education systems is the extent to which students are provided with access to support systems. The cheapest form of distance education is found in those systems which register students for an examination, provide them with détails of the syllabus and a list of books which will help them, and leave them to prepare themselves. This approach is that used by the University of London external degree system. With the exception of those taking the economics degree, students who wish to receive tuition have to enrol with a commercial correspondence college which provides them with lecture notes, set assignments, and arranges for these to be marked and commented on by a tutor. When students are ready, they present themselves for the examination. The cost of tuition is paid by the student. On the other hand, many of the new wave of distance-teaching universities founded in the 1970s and 1980s in the wake of the British Open University have developed a sophisticated system based not only on the provision of educational course materials but also of student support services including counselling, correspondence tuition and face-to-face tuition (Rumble and Harry, 1982). The cost of tuition and counselling is either a direct (variable) student cost or a semi-variable cost related to the number of students taken on by tutors and counsellors. Clearly, the provision of such services represents a reversion to the labour-intensive methods found in traditional education. The higher the direct variable or semi-variable cost per student, the nearer the teaching cost of distance education will approach that of traditional forms of education. Thus, for example, one of the Open University's early geography courses had a direct variable cost per student that was much higher than the variable cost of social science courses in traditional British universities, thus preventing the Open University from reaping any of the economies of scale said to be present in distance education, at least on this course (Laidlaw and Layard, 1974).

Obviously, as the amount of face-to-face tuition provided increases, so a basic characteristic of distance teaching, the physical separation between the teacher and the learner, is lost. Ultimately, the situation occurs in which conventional classroom-based teaching, whether provided by regular teachers or by semi-trained animateurs, is being supported by centrally produced materials. There are or have been numerous systems of this kind, particularly at primary and secondary level (for example the Radio Mathematics Project in Nicaragua, the Mauritius College of the Air, the El Salvador Educational Television project, Telescundaria in Mexico, etc.). Schemes of this kind may have a lower cost per student because the additional cost per student of developing, producing and distributing the centrally produced materials is more than offset by reductions in cost arising from the use of semi-trained animateurs. However, they are not distance education systems.

The costs of the curriculum

A further factor which influences the costs of distance education is the number of courses which the institution offers. Each course represents an investment in course materials. The more courses on offer, the greater the total investment and the greater the cost of maintaining them, or eventually replacing them with new versions or with entirely different courses.

The number of courses is determined to some extent by the number of subject areas to

be covered, the extent to which students pursue a single subject in depth (for example a specialized single-subject degree course) or a combination of subjects, and the extent to which a range of optional courses is provided.

The most efficient distance-education system will be one with a relatively small range of courses and large numbers of students. The distance-teaching programme of the Universidad Pedagógica Nacional in Mexico is a good example. Dedicated to the in-service training of primary- and secondary-school teachers, the range of courses offered by the University is relatively limited and the numbers of students (60,000 in 1980) substantial, thus ensuring that each course has a large number of students.

As more courses are added to the curriculum, so the numbers of students per course will decline provided the total number of students remains constant or does not increase pro rata to the increase in course options. For example, the British Open University was established in 1971. From the start it was assumed that it would grow quickly in size. In its first year it took in 25,000 students, registered on four courses. But by its second year, with course numbers increasing rapidly and student numbers still climbing, Laidlaw and Layard (1974) were already able to foresee that the case for developing higher-level courses with relatively small numbers of students would have to be justified 'on the grounds that they are an integral part of a system providing wider access to complete degree courses rather than that they are a cheap way of doing this'. By 1976 Wagner (1977) could point out that the economies of scale reaped by the Open University had been achieved in its first years of operation, since when it has been following the conventional university pattern of little increase in productivity. Wagner argues that the major reason why this was so was that the University had been using the economies of scale produced by rising student numbers to increase the overall number of courses offered to students.

However, there were limits to the extent that the Open University could justify increases in its course offerings at the expense of economies of scale. Early in its development, the University prepared an academic plan which aimed at presenting an undergraduate academic profile equivalent to 111 credits (each credit equivalent to about 420 to 450 hours of student work). It quickly became apparent that it could not develop and support this load within existing or likely resource levels, and accordingly a more modest plan for the presentation of 87 credits was approved. This plan, with minor modifications, still forms the basis for the Open University's undergraduate academic plan. It is accepted that the University's first degree is a general degree, and that students will not be able to specialize in a particular subject area. Moreover, it is recognized that further expansion of the profile of courses will have to be accomplished through the development of inexpensive courses or be accompanied by an increase in student numbers.

One way of minimizing the costs of a profile is to extend the life of a course so that the costs of development can be written off over more years. Again the experience of the Open University is instructive. Originally it planned to replace its courses every four years. It rapidly became obvious that it could not both sustain this aim and increase the number of courses on offer to students. Courses now routinely have to last for from eight to ten years, with all the implications this has for credibility as course content becomes dated. It is only fair to say that the University is very conscious of this problem.

Commercial correspondence colleges have solved these problems by only presenting courses with comparatively low development and production costs, concentrating on courses that will not rapidly become outdated, and resolutely not developing courses which will attract relatively few students over their life. The new video-tape lecture systems such as that developed by the National Technological University in the United States has solved the problem of presenting state-of-the-art material which dates rapidly by video-taping lectures given in conventional universities, but the videos fall far short of the standards of self-instructional teach-

ing material adopted by the best distance-education systems.

Absolute costs, average costs, efficiency and effectiveness

The many examples given above show not only how difficult it is to cost distance education in the abstract, but also how the costs of particular systems can be affected by management decisions. For this reason, relatively few costs have been cited in this article.

The absolute cost of a system can be very high. On the other hand, the cost per student can be brought down below that found in traditional systems operating at the same educational level. Whether this happens may well depend upon the number of students attracted into the system. The chances of the Venezuelan Universidad Nacional Abierta reducing its average costs to a level where it could achieve its planners' aim that it should bring down the annual cost per student and reduce the social cost per graduate was threatened by the disastrously high drop-out rates it experienced in its early years (only 22.6 per cent of the 1978 intake passed the introductory course), and the fact that the number of students attracted into the University actually fell between 1978 and 1981 while course offerings increased (Siqueira and Lynch, 1986). With an annual enrolment of about 4,400, the costs per course enrolment at Athabasca University were comparable with those found in conventional Albertan universities, while in 1972 the average cost per student at the more capital-intensive British Open University was found to equal that in conventional British universities when the university had 21,700 students (Laidlaw and Layard, 1974). (At the time of this study, it already had over 31,000 students.)

Most economic studies measure the relative cost-efficiency of distance and traditional educational systems. Efficiency is concerned with the cost of achieving outputs: an organization is efficient relative to another enterprise if its output costs less per unit than that of the other institution. It becomes more efficient to the extent that it maintains outputs with a less than proportionate increase in inputs. The fact that a distance-education institution has a low cost per student, credit hour or graduate does not necessarily mean that the institution is as efficient as it could be. It may well be able to reduce its unit costs by increasing its internal efficiency through changes in practice and cost reductions, as Mace (1978) commented in respect of the British Open University.

Generally, in making a comparison, it is assumed that the quality of the output of systems operating at the same educational level is comparable. This is not always the case. There is, however, some concrete evidence that the level of comprehension of students completing traditionally taught economics courses at Heriot Watt University in the United Kingdom and those completing distance-taught economics courses at the Open University was similar (Lumsden and Scott, 1982). More generally, however, 'planners will be disappointed at the amount of evidence available' (Eicher et al., 1982), since what there is suggests that motivated students can learn from any medium provided it is competently used and adapted to their needs (Eicher et al., 1982; Wells, 1976).

Who should pay?

The costs of any distance-education project may be met by a number of agencies. Broadly speaking, the possibilities are government, international aid agencies, employers and students.

In considering who should meet the costs, a distinction is sometimes made between projects that aim to reach students in the normal school-age population and those aimed at post-secondary or adult populations. It is often argued that the costs of adult education should not fall on government. The reasons for this include: (a) adherence to a 'front-loaded' model of education which undervalues adult education, and hence believes that it is not something that should be paid for by government; (b) the belief that non-vocational adult education is essen-

tially a private affair, of benefit to the individual, and that therefore the individual should pay for it; (c) the belief that the costs of vocational and professional education should be met either by the individual or his or her employer; and (d) concern at the open ended nature of the commitment to 'continuous education' that is implicit in the extension of state aid to adult education.

There is, however, another perspective that argues that the education of adults is not a luxury, that increased technological and social change leading to the obsolescence of knowledge acquired during the initial period of education and training requires continuing investment in the retraining and re-education of individuals, and that this is not just something which the individual or employer should pay for (since the capacity of individuals and employers to pay for it is limited), but also a responsibility of government.

Many governments are aware of the need to retrain large numbers of people in areas of national skill shortages, but they have been much more reluctant to acknowledge a responsibility for the development of adult and continuing education in non-vocational subjects and areas where there are no skill shortages. The question 'Who pays?' is thus linked to the question 'What is being taught?'

It is clear that large employers are seriously concerned about skills shortages and the need for retraining. Several large companies have set up in-house distance- and open-education programmes to meet the needs of dispersed workforces. The State University of California, Chico, has set up a satellite-delivered video-tape and tutored video instruction system to meet the needs of engineers working for Hewlett-Packard. Small firms, however, cannot afford to invest in the development of distance-teaching systems.

Individuals, while they may be willing to invest some personal resources in their further education, have to do so within the level of discretionary income which they have available (that is, the income they have left over after they have paid for the basic necessities of life for themselves and their families). What constitutes discretionary income will be determined by income levels, personal expectations about what is a necessity, and the cost of these. It is clearly important that those setting up a distance-education system should know what the discretionary income of the target student population is in order that judgements can be made about about students' potential ability to pay fees and meet the costs of studying.

In a commercial correspondence college, the fee per student per course (Y) will need to cover: (a) the direct (student variable) cost of teaching (Ω); (b) the direct costs of presenting the courses ($P\pi$); (c) the development and production costs of the courses ($C\delta$), annualized over the life of the courses (L), and uplifted by projected rates of inflation in order to generate the capital required for investment in the replacement course; and (d) the fixed costs of the enterprise, including an allowance for the replacement of capital (F). The more student courses (s') there are in the system, the lower the fee can be:

$$Y = \Omega + \frac{P\pi + (C\delta/L) + F}{s'}$$

A commercial correspondence college may also wish to generate a profit.

The institution will need grants from government or other sources to the extent that student fees do not meet total costs. Not surprisingly, commercial correspondence colleges have restricted themselves to course lines which do not need constant updating and which will attract high volumes of students. There is always the danger that the number of students attracted to the programme will be insufficient to generate sufficient funds to replace the stock of courses and the other capital tied up in the enterprise. Indeed, this was a major problem in the British Open Tech project: when the government's pump-priming funds came to an end, the projects had to become self-sufficient. Relatively few of them had enough students to be able to make this change.

One other aspect of costs needs to be mentioned here, and this is the cost to students of equipping themselves to study. Depending on

the media choice made by the institution, students need to have access to a range of equipment in order to study. In some cases personal ownership of the equipment is already widespread among the population at large and it may be reasonable to expect all students to supply their own equipment (radios). In other cases (television sets, audio-cassette players, video-cassette players, personal computers), student ownership will depend in part on the market penetration of the equipment among households, given the society in question, or the extent to which it is reasonable to expect students to equip themselves out of their discretionary income. Among other factors which may come into play is the extent to which the piece of equipment is required on a number of courses, or will only be used on one or two courses. In the latter case, or where it is clear that students will be unable to afford the equipment themselves, then the institution may have to provide it for students. It is very important that in deciding what media to use, the cost to the student of the particular choice is evaluated against the students' ability to meet it.

It is clear that the introduction of new technologies can change the cost structure of distance education and also the balance between the extent to which the institution or the student is expected to meet the cost. Distance education is seen as a means of lowering the cost per student and hence of reaching more students. It will be particularly ironic if, through the adoption of new information technologies based on the computer and advanced telecommunications, students should have to bear an increased proportion of the costs of learning, for, as the cost to the student rises, so it becomes more likely that only the better off will be able to afford access to distance courses without government and employers' help. If help is not forthcoming, then 'advanced technology' distance education will become yet another service restricted only to those whose discretionary income is large enough to meet the cost. The disadvantaged, the unemployed and the low paid will lose out, though low-cost, traditional correspondence-based systems (based on print and correspondence tuition with some use of audio) may continue to serve their needs. In Third World countries, this latter form of distance education may be the only kind that can be provided, given the costs involved in setting up and running the more expensive 'high tech' forms of distance education.

This article has shown why, given the differences, in the structure of costs between distance and traditional education systems, the former can be cheaper per student, credit hour or graduate than the latter. Distance education can also be as good as traditional forms of education, in terms of the quality of what is learnt. Whether distance education is actually cheaper depends on a number of factors, including choice of media, the number of subject areas covered and courses offered, the extent to which the direct variable student cost is kept below the level found in traditional forms of education, and, of course, the number of students. It has also shown that the issue of who pays (student, employer, or government) is an important one which has a bearing on both what is taught and access, and it has suggested that, as new technologies develop, so the technologization of distance education will put increasing costs on to students, with further implications for access. Third World countries, it is suggested, may be unable to exploit the new 'high tech' forms of distance education now being developed in the advanced industrialized countries. ■

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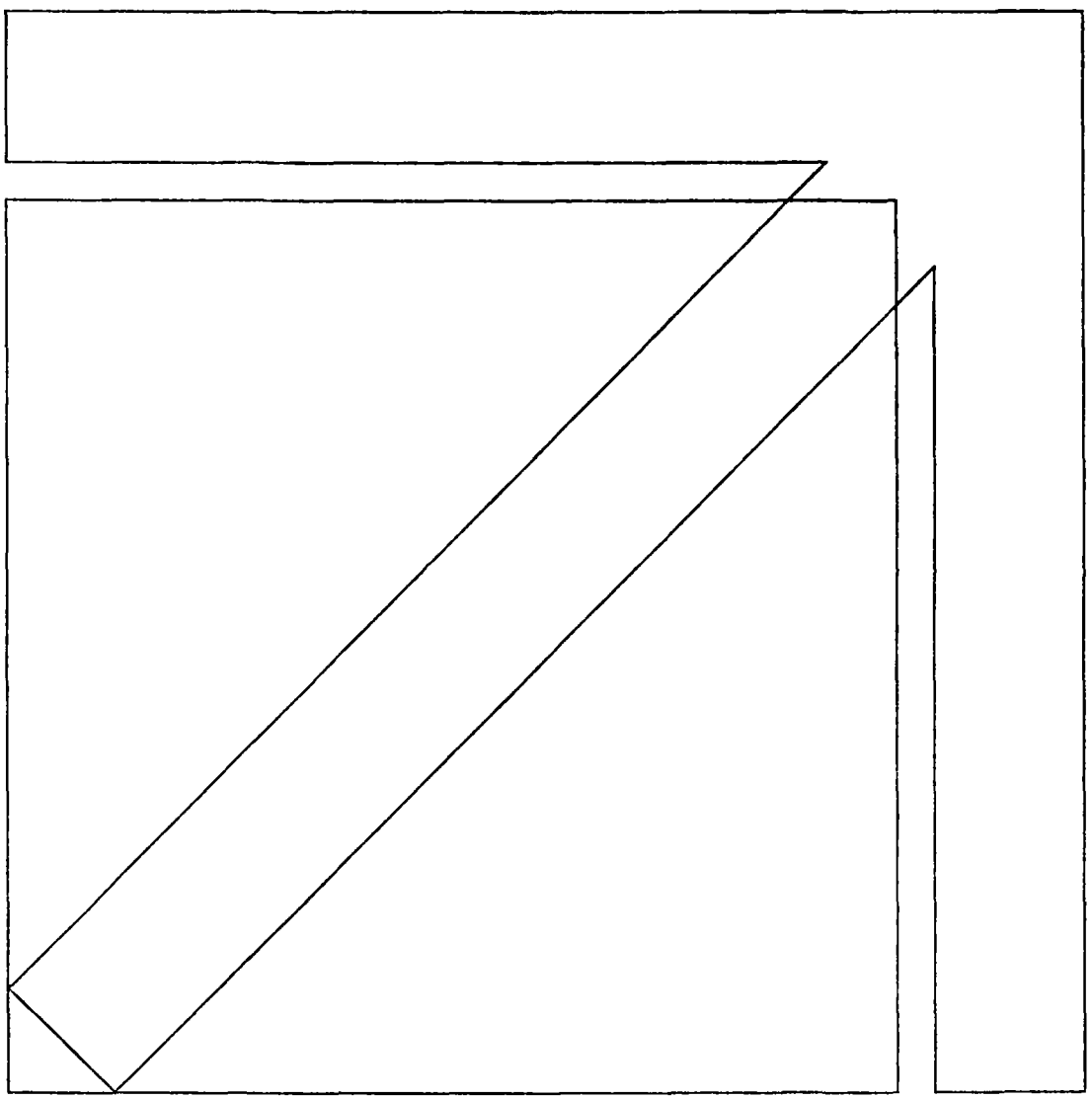
TRENDS AND CASES



The decentralization of education in Mexico

Carlos Ornelas

The most important educational policy of the government of President Miguel De la Madrid (1982–88) can be summed up in one word: 'decentralization'. The decentralization of the national education system was the highlight of his inaugural address, in which he proposed a concrete government strategy to fulfil democratic goals. He stated:

> We will push forward with the decentralization of national life. . . . Responding to a national claim, I made the decision to promote the transfer of the preschool, elementary, secondary and further education from the Federal Government to local [state] governments, as well as transferring the corresponding financial ressources . . . the Federal Government will maintain the rectorial and evaluative functions through the Secretariat of Public Education. The labour rights of the teachers and the teacher's union's autonomy will be scrupulously respected.[1]

No strong demand for the decentralization of education can be found in the documents of the official Revolutionary Institutional Party (PRI) in the presidential campaign of 1981/82, or in the principal national newspapers of those years that I have reviewed. However, this idea was heavily emphasized by the presidential candidate on many occasions.[2] The academic literature on the topic produced in those years includes two articles by leading scholars who argue that the decentralization of national life is a step towards increasing political democratization. But it is difficult to believe that these two intellectual articles can be so influential as to constitute a national claim.[3] Thus, it appears that the decentralization of national life, and therefore of education, is more of a state policy than a popular political demand.

Why did the Mexican Federal Government make the decision to decentralize the national system of education going against the historical trend towards centralization?[4] Since there are not yet any satifactory answers to this question, and much of what is being said about the subject either digresses or is contradictory, it seems reasonable to systematize the main political positions so far expressed. This may help to explain the motives of the dominant group in decentralizing education. The objective of this article is to provide a comprehensive outline to deal with the question. In so doing, the historical dimensions of the problem will become clearer.

The federalist hypothesis

In their discourse, President De la Madrid and the late Secretary of Public Education, Jesús Reyes Heroles, emphasize federalism and constitutional law as the principal motives for the decentralization of education. The federalist hypothesis therefore refers to the aims of the dominant group to recover the original spirit of the constitution. The Secretary of Public

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Education stated, in May 1983, 'To decentralize national life, means to consolidate the federal system of political organization.'[5] Through many official statements both implicit and explicit this discourse claims that the decentralization of education and national life is a step forward in the democratizing of Mexican political and social institutions.[6]

In fact, the Mexican Constitution of 1917 (Article 3) states that elementary education in Mexico should be universal, free and compulsory. Accordingly, this type of education must be the responsibility of the municipalities, while secondary and further education must be under control of the states: Only the National University and a few research centres would be co-ordinated by the University Department, a branch of the Federal Government.

However, by the early 1920s, José Vasconcelos, a leading revolutionary intellectual and Rector of the National University, launched a campaign for the creation of a secretariat of public education because, in his view, neither the states nor the municipalities possessed enough resources to maintain and expand schooling. He succeeded in his campaign. In 1921 the Secretariat of Public Education (SEP) was established, the Constitution reformed (Article 73: XXVII), and President Alvaro Obregón appointed Vasconcelos as its first secretary.[7]

Interestingly, this step towards centralization, which somehow weakened Mexico's federalist political organization reflected in the Constitution, was incorrectly called 'federalization'. Nevertheless, most state governments maintained their own educational policy for years. Historical evidence shows that the growth of enrolments at all levels and even the creation of public universities took part in many states.[8] But the trend towards centralization of education, especially in its political aspects, continued to grow during the years of the socialist education policy.[9] In October 1934, the Constitution was again reformed to give the Federal Congress power to legislate so as to unify and co-ordinate education nationwide and to provide the federal executive with powers to centralize educational policy and curriculum design.[10] Thus the material and legal conditions were created to centralize education. To decentralize education, and the health services,[11] according to the dominant group, is a revolutionary initiative that will improve the conditions of living of the population.[12]

According to Gil Villegas, none of the major political theorists (de Tocqueville, Mill and Weber), who dealt with issues of democracy and the dichotomy between centralization and decentralization, drew a clear link between federalism, on the one hand, and democracy and decentralization, on the other. There are cases in history of antidemocratic and decentralized states as well as democratic and centralized states.[13] Moreover, given the observed process of centralization of economic, social, cultural and political life in Mexico, it is difficult to allow much credence to this hypothesis. Nevertheless, it would be incorrect to reject it completely. The political discourse of the country's leadership has had an impact on changing legislation, transferring some responsibilities to state governments and implementing educational policies in many states. Therefore, such a discourse has an impact on the political organization of Mexico.[14] Thus, it is necessary to continue exploring the issue and looking for other answers to the question.

The efficiency argument

The centralization of the education system under SEP for many years has meant the concentration of power and decision-making at the central bureaucratic level. It implies a pyramidal political structure in which important decisions are made at the top and flow down through a complex and hierarchical institutional framework. Each echelon of the hierarchy has a share of power and access to resources. The efficiency argument refers to the aims of the dominant group to redistribute power and in so doing to dismantle gradually a huge and burdensome bureaucratic apparatus.

Despite the constitutional reforms of 1921

and 1934, the implementation of educational policy at a national levels was by no means achieved immediately. Rather it was a historical process plagued with many conflicts and contradictions.[15] There were times when SEP was more a regulatory organ of the state than an effective state apparatus. For instance, in 1928, seven years after its creation, SEP had direct control over only about 20 per cent of the education system, both in terms of the number of schools and student enrolments.[16] By 1982, these figures had changed dramatically: the states and the private sector held control of less than 20 per cent while SEP managed more than 80 per cent of the national system of education.

In 1982, when the De la Madrid administration took over, SEP was composed of 7 under-secretariats (five of them organized by educational level and two by activities: culture and sports), 44 director-generalships, 304 managerships, 6 councils, an internal general administration and budgeting committee, a controller's office, a general co-ordinator, 31 state delegations and nearly 60 co-ordinated institutions. In the same year, including teaching and staff personnel, SEP had nearly 800,000 employees and over 10,000 civil servants, and more than 15 million students under its direct control. In addition, SEP had the responsibility for designing, producing and distributing over 100 million copies of free textbooks every year.[17] Moreover, a decentralized committee was (and still is) in charge of the design and building of school facilities nationwide.[18]

In the historical process of centralization of education, the administration of such a tremendous bureaucratic machine became a problem. SEP was characterized by routine operation of the system, struggles over resources, political conflicts, duplication of functions, lack of horizontal communication, etc. By the early 1970s political initiatives to reform the education system encountered much resistance from bureaucratic groups. It was also clear that the passivity and indifference of staff and teachers blocked attempted reforms.[19]

This centralization of control brought inefficiency into the system. In addition to being slow, the operation of SEP was costly. Resources were allocated to maintain and preserve a bureaucratic structure instead of being channelled into the schooling process itself.[20] The result, according to the country's highest authorities, was declining standards in the quality of education.[21] Administrative inefficiency and poor management therefore provided the rationale to begin the decentralization of SEP's administrative apparatus in 1978.[22] This first step towards decentralization was termed 'administrative deconcentration'.[23]

The efficiency argument implies that a decentralized system will rationalize educational administration and resource allocation. Fluidity and effectiveness should characterize the future operation of schooling so that many of the problems created by the enormous size of SEP will be resolved at the state level. It also implies that local participation in financing education will improve. The argument goes further in postulating that by being decentralized, the education system will be more responsive to community needs and thereby encourage the participation of parents and students in the running of schools. The final goal of the decentralization of education is to improve the quality of education. This improvement, in turn, it is argued, will be the most robust indicator of an efficient education system.[24]

This argument explains some of the motives the dominant group may have for decentralizing education. It seems reasonable to assume that the administrative complexity of the system will be reduced in so far as small units will enjoy a certain degree of authority. Some decisions made at the local level can be based on reliable information and on a political understanding of the situation. However, this implies a dispersion of power, a multiplicity of curricular options according to state and regional characteristics, and the political willingness of SEP officials to modify habits and to render up a portion of their power. However, the whole process of decentralization of education is itself centralized. The central administrative

apparatus designs and implements policy regarding when and to what degree authority should be delegated.[25] It also controls curricular design nationwide and elaborates and distributes the free textbooks. In addition, there is no strong evidence to support the case that after four years of the decentralization of education policy, the SEP central bureaucracy has transferred total administrative control of education to any state government.[26]

As to improving the quality of education, it can be argued that in Mexican history this issue has been used to support trends towards centralization.[27] This implies that it would be incorrect to give very much weight to this aspect as the leitmotiv of the dominant group to decentralize education. There is no evidence that the system is more efficient than it was five years ago or that the quality of education has improved. Therefore it seems important to explore the main power struggles in the national education system.

Power relations: Thesis 1

The growth and expansion of SEP and its administrative apparatus, in addition to giving power to the state bureaucracy gave birth to a national teachers' union. According to reliable historical accounts, the Sindicato Nacional de Trabajadores de la Educación (National Education Workers' Union—SNTE) was organized in 1943 by Jaime Torres Bodet, Secretary of Public Education. Previously the teachers and other secretariat workers were organized in a host of small unions with many conflicts and rivalries. In some of the unions the Communist Party and other left-wing organizations held official positions and even occasionally exercised leadership. This was partly because socialist education was official state policy during the years of President Cárdenas (1934–40).[28]

The creation of the SNTE had two political implications. First, the absorption of the union within the official party gradually diminished the seeds of dissidence, and, second, it allowed SEP to implement educational policies nationwide. Salaries, fringe benefits, promotion and other teachers' issues could now be negotiated in a centralized manner. This strengthened the power of the national executive committee of the SNTE not only because of the collection of membership fees, but also because its central bargaining position with SEP included almost everything, from recruitment to posting of teachers.

To assure loyalty to the PRI, members of the SNTE were given political positions, including local and federal representative seats, places on city councils, seats in the National Senate, but most important, the PRI provided the opportunity for some teachers to pursue careers as SEP officials.[29] Thus some undersecretariats and director-generalships were administered and operated by civil servants who began their careers as SNTE cadres and, it is reasonable to assume, were loyal to the teaching guild. By these means, teachers who shared political views and supported the same cause were found on both sides of the negotiating table. This was allowed and even encouraged by the ruling party. It was a corporatist pact.[30]

After many internal struggles, in the early 1970s the SNTE leadership was finally taken over by a group that named itself Vanguardia Revolucionaria del Magisterio (Revolutionary Vanguard of the Teachers' Union). This group exercises power within the ranks of the union, the party, SEP and other branches of the state apparatus, and it is considered a power to be reckoned with.[31]

Political relationships between SEP and its employees have been contradictory throughout its history. None the less, an institutional arrangement was worked out which allowed the teachers' union leadership to escalate the SEP bureaucracy by pushing forward its own guild interests in the context of national politics. The SNTE has historically been supportive of the process of centralization. It is the main advocate of federalization so as to harmonize working conditions of teachers throughout the country.[32]

The decentralization of education, it has been argued by conspicuous union represen-

tatives, aims to dismantle SNTE and to denationalize education.[33] This thesis, so far emphatically denied by the President[34] and the Secretariat of Public Education,[35] served the hegemonic group of the SNTE by professing its loyalty to the party, to the state and to national education. The SNTE, albeit ambiguously, has opposed the decentralization policy because it foresees a diminishing of its power and a fragmentation of its political unity.

This thesis, although very suggestive in terms of political analysis, is not completely satisfactory. The SNTE has been an effective political machine during election times. It mobilizes its membership to organize rallies and meetings, students' parades and receptions with candidates of the official party. It does not seem likely that the PRI would want to dismantle such an effective political machine. Furthermore, according to convincing analyses, the SNTE traditionally has served the state apparatus by dealing with rank-and-file teachers' demands, controlling union membership within the limits established by SEP, and very often acting as a repressive apparatus against political dissent.[36]

Therefore, it is reasonable to argue that the state objectives in decentralizing SEP are not to dismantle the SNTE, but to try to create a new corporatist pact in which the government will play a more dominant role, by facing the teachers' union with as many employers as there are states in the country. The power relations between the state and the SNTE are thus modified, and the overriding power of the National Committee will be redistributed among its sections.

Nevertheless, the thesis cannot be completely rejected. If the decentralization of the education system continues, the political relationships between the state and the SNTE will suffer substantial changes. However, the national union will not disappear.

Power relations: Thesis 2

The growth of enrolments, and the increasing complexity of the concentration of power in the national committee of the SNTE, brought about other conflicts in the political domain. During the late 1970s and early 1980s, the years of the oil boom, many resources were channeled into the education system. The official policy was to enrol as many as 95 per cent of the student demand. 'Education for all' was the watchword. Many new school facilities were built, new institutions were created (albeit centralized, like the National Institute for Adult Education), and thousands of new teachers were recruited.[37]

SEP's cumbersome bureaucratic structure was not capable of responding to the speedy incorporation of many new teachers. Paperwork was slow, teachers who were recruited were not put on the payroll until after many months or even after one or two years, teachers were unnecessarily moved from one place to another due to bureaucratic decisions, SEP officials were unresponsive to teachers' demands for higher compensations for working in rural areas, and so forth. Very soon complaints and protests among the teachers began. Neither the national leadership nor the sections' leadership led the teachers' demands, but instead tried to control them and put down protests.[38]

Teachers' turmoil over unresolved problems and the SNTE's role in suppressing their demands were among the causes of a growing movement of dissent. From 1978 to 1981 this movement gradually shaped its political character through, for example, protests over the lack of payments, dissatisfaction with the SNTE leadership, and demands for a more democratic union. The result was that by 1981, independent forces (from left-wing political parties and groups), through democratic elections, won the leadership of the SNTE sections in Chiapas and Oaxaca and demonstrated their political presence in many other parts of the country.

The insurgent groups challenged both the national committee, for its anti-democratic

policies, and the state, for maintaining corporatist control overs teachers' organizations. Furthermore, at least in Chiapas and Oaxaca, evidence suggests that the sections' leadership is pursuing anti-centralist education policies, taking control of the schools, and creating more independent political organizations of peasants and workers. In the midst of these struggles, repression and mobilization, the insurgent groups are attempting to weaken the hegemony of the official party, and threatening to take over the leadership of the rank and file of teachers.[39] If this happens the PRI will lose one of its pillars.

This thesis sees the decentralization of education as the state's attempt to cope with this and other types of political conflict at the local level. If the system is decentralized, it is argued, it would be possible to confine the dissidents to the states where they already hold political positions. In this way it is possible to avoid the spread of insurgent ideas to other sections of the SNTE, and later to devise instruments to recover these positions for the PRI. It appears that the Revolutionary Vanguard group is impatient and striving to recover these positions.[40]

The dissidents were not very active when the announcement to decentralize education was made. However, during the presidential campaign the movement was at its peak.[41] It is reasonable to suppose, on the basis of the awakening of the PRI, that the demands of the dissident movement had some effect on motivating the dominant group to decide that the decentralization of education would improve the efficiency of the party and thereby avoid major social conflicts. However, it is also difficult to believe that it was only this movement, though very important in Mexico's political life, that had such impact in shaping national policy.

Dependency and international influences

Mexico, as a Third World country, plays a subordinate role in the international capitalist system. Dependency theory emphasizes the hegemonic role played by central countries in shaping political decisions which facilitate and reproduce the international economic order.[42] Some trends that originated at the centre are replicated in the developing world. This seems to be the case in the decentralization of education.

Similar issues appear in countries with different characteristics and political endeavours, like Chile, Peru and Mexico,[43] Papua New Guinea,[44] the Philippines,[45] the United Republic of Tanzania,[46] and even China.[47] The fifth possible explanation to the question of why Mexico decided to decentralize education therefore is that there is an international climate for such a trend.[48]

Some evidence suggests that the decentralization of education policy worldwide has indeed a centre from which it is diffused—the World Bank. Accordingly, the rationale for the decentralization of education lies in the need to find resources for education at local levels and to grant independence to local authorities to develop an educational policy that responds to regional characteristics.[49]

This hypothesis conveys the notion that the external debt of Mexico, second among Third World countries, has weakened the political independence of the Mexican state. It is implied in this thesis, in a complex set of international relations, that Mexico has agreed to pursue the policy of decentralization while maintaining adherence to its traditional independent foreign affairs. This is reflected by its role in the Contadora group, the United Nations, Unesco and other international forums.

It is reasonable to suppose a certain degree of influence of the World Bank and other international agencies over Mexican politics. However, to give definitive weight to this single aspect would be erroneous since it tends to overemphasize a type of economic determinism which obscures many other aspects of the issue and does not take into account the internal contradictions of Mexico. However, it certainly forms a part of the explanation.

If none of these explanations so far discussed seems to offer a satisfactory answer, what is to be done?

Five possible answers to the basic research question of why the Mexican state decided to decentralize the education system have been presented. However, although they appear to be purely empirical arguments based on political positions, it is possible to perceive a set of theoretical outlines underlying each of these theses. The first one can be broadly defined as constitutional republican theory; the second can be categorized within the general framework of modernization theory; the third one clearly fits into the corporatist theories of the state; while the fourth is based upon neo-Marxist approaches; finally, the last hypothesis stresses theories of dependency and imperialism.

From a positivist viewpoint if a hypothesis, upon being tested, does not hold it has to be rejected. Consequently, it is quite possible that we may never find a logical explanation of the decentralization of education in Mexico. However, I contend that it is possible to develop coherent explanations by adding credible and substantial elements of each of these hypotheses and then reinterpreting them according to a general theory. In this article it is not possible to outline such a theory; suffice it to say that it is neither eclectical nor a mere aggregation of ad hoc features so far defined. Concepts and issues must be developed to take into account such different motives as federalist aims, the search for efficiency, political and international relations as well as some other aspects that may arise.[50]

All these elements are embedded in a framework of analysis which pays attention to conflicts and contradictions of educational politics in Mexico. Central to this theory are the concepts of deep structures and shallow structures. The former refers to the tendencies and political behaviours that are difficult to modify, either because of their historical development or because they are deeply rooted in society; the latter are features that arise from the deep structures but are easier to reform.

Such concepts may help to substantiate the argument that indeed the Mexican state has inaugurated a trend towards the decentralization of education (as well as other public services), but that the aim is to decentralize the shallow structures of the education system in order to centralize the deep structures. In other words, the Mexican state aims to decentralize the administrative apparatus and routine operation procedures of the national system of education in order to centralize state power.

Notes

1. Miguel De la Madrid, 'Protesta de Ley como Presidente de los Estados Unidos Mexicanos', *El Dia*, 2 December 1982.
2. Miguel De la Madrid, *Manual síntesis de pensamiento político*, Mexico City, Partido Revolucionario Institucional, 1982.
3. Alejandra Moreno Toscano, 'Descentralización: México, modelo a desarmar', in Hector Aguilar Camín (ed.), *El deasafio mexicano*, pp. 165–74, Mexico City, Oceano, 1982; and Enrique Florescano, 'Política cultural: inversion del desperdicio', in ibid., pp. 307–18. Furthermore, Alejandra Moreno is the daughter of Manuel Moreno Sánchez, who was the presidential candidate of an opposing political party, and Enrique Florescano is her husband. This makes it more difficult to think that these papers were influential in shaping a political demand.
4. This article is part of a research project in progress. In another piece I deal with conceptual problems of the different meanings of decentralization; in another one I shall attempt to evaluate what actually has been done to decentralize the education system in Mexico.
5. Jesús Reyes Heroles, *Educar para construir una sociedad mejor*, p. 74, Mexico City, Secretaría de Educación Pública, 1985.
6. Noel McGinn and Susan Street convincingly argue that the decentralization of education, as has been conceived in many countries, does not necessarily lead to broadening people's participation in decision-making, nor to democracy and efficient management. See Noel McGinn and Susan Street, 'Educational Decentralization: Weak State or Strong State?', *Comparative Education Review*, Vol. 30, No. 4, November, 1986, pp. 471–90.
7. Guadalupe Monroy Huitrón, *Política educativa de la Revolución (1910-1940)*, pp. 29–31, Mexico City, SEPsetentas, 1975.
8. See Isidro Castillo, *México sus revoluciones sociales y la educación*, Vol. III, Chapter 2, Morelia, Gobierno del Estado de Michoacán, 1976.
9. The socialist education policy (1934–40), aimed at changing the social relations of education, to improve the living conditions of the people and to modernize the school system. See David Raby, *Educación y*

revolución social en México, pp. 51–64, 98–107, Mexico City, SEPsetentas, 1975.

10. Carlos Ornelas, 'La educación técnica y la ideología de la Revolución mexicana', in Graciela Lechuga (ed.), *La ideología educativa de la Revólucion mexicana*, pp. 51–60, Mexico City, Universidad Autónoma Metropolitana-Xochimilco, 1984.
11. See Ulises Beltran and Santiago Portilla, 'El proyecto de descentralización del gobierno mexicano', in Blanca Torres (ed.), *Descentralización y democracia en México*, pp. 91–118, Mexico City, El Colegio de México, 1986; and Elena Jeannetti Dávila, 'Descentralización de los servicios de salud', in ibid., pp. 175–204.
12. In his discourse, the late Secretary of Education, Jesús Reyes Heroles, emphasized this aspect, to the extent that a whole rhetoric on an educational revolution was created. I do not wish to enter into a debate on whether it was a revolution or not. Suffice it to say that such a discourse permeated all public speeches and official decrees. However, I will not analyse in this article the implications of these elements because it seems that the rhetoric of the revolution in education was subtly abandoned after the death of Reyes Heroles.
13. Francisco Gil Villegas, 'Descentralización y democracia: una perspectiva teórica', in Torres, op. cit., pp. 33–67. Gil Villegas concludes that in present times, instead of decentralization it is better to have a dispersion of power in order to democratize social and political life in Mexico. His implicit argument therefore is that the policy of decentralization, as conceived by the Mexican dominant group, does not imply a democratizing process.
14. In fact, a few days after President De la Madrid took office, he sent a law project to the Federal Congress to reform the National Constitution (Article 115), providing the municipalities with their own source of income and formal political independence from state governments. The reforms were approved in December 1982. Beforehand the municipalities' income was left to the political will of state governors. See Dirección de Asuntos Jurídicos, *El marco legislativo para el cambio*, Vol. 3, pp. 10–21, Mexico City, Presidencia de la República, 1983.
15. There are many examples of these conflicts like the free national textbook policy of President López Mateos which was challenged by the traditional right, and the many students' movements of the 1960s for university autonomy and democratic government. For a review of the former, see Fernando Solana, et al., *Historia de la educación pública en México*, Mexico City, Fondo de Cultura Económica, 1981. For the latter, see Gilberto Guevara Niebla (ed.), *La crisis de la educación superior en México*, Mexico City, Nueva Imagen, 1981; Daniel Levy, *University and Government in Mexico: Autonomy in an Authoritarian System*, New York, Praeger, 1980; and Carlos Ornelas, 'El Estado y las fuerzas democráticas', *Foro universitario*, No. 43, June 1984.
16. Alejandra Moreno Toscano, 'Desarrollo regional y descentralización educativa', paper delivered at the Encuentro sobre [la] Descentralización de la Vida Educativa, Mexico City, Universidad Nacional Autónoma de México, 22 September 1983, p. 22 (mimeo).
17. These figures are estimations based on: Secretaría de Educación Pública, *Estadística básica del sistema educativo mexicano*, Mexico City, SEP, 1984; Asociación Nacional de Universidades e Instituciones de Enseñanza Superior, *Anuarios estadísticos 1979–82*, Mexico City, ANUIES, 1980–83; and Organización de los Estados Americanos, *Los perfiles educativos de América Latina: perfil educativo [de] México, 1985*, Washington, D.C., OAS, Programa Regional de Desarrollo Educativo, 1986.
18. It is interesting to note that (to my knowledge) nobody has done any important research on the Comite Administrador del Programa Federal de Construcción de Escuelas (CAPFCE), which has been working in a decentralized administrative fashion since its creation in the 1950s.
19. This seems to be the case of President Luis Echeverria's educational reform in 1970–76. See Pablo Latapí, *Análisis de un sexenio de educación en México: 1970–1976*, Mexico City, Nueva Imagen, 1980.
20. A detailed analysis of the process of resource allocation in Mexican public education is provided in Noel McGinn, Susan Street and Guillermo Orozco, *La asignación de recursos económicos a la educación pública en México*, Mexico City, Fundación Javier Barros Sierra, 1983. This study also deals with the issues of deconcentration of education to be discussed below.
21. See the speech by President Miguel De la Madrid in Tlaxcala, 20 March 1984, *Excelsior*, 21 March 1984.
22. See the collection of speeches of the Secretariat of education during those years: Fernando Solana, *Tan lejos como llegue la educación*, Mexico City, Fondo de Cultura Económica, 1983.
23. In the terms of the Mexican Administrative Right, 'deconcentration' and 'decentralization' are well differentiated. The first refers to a representation of central authority at state level. That was the case of the *delegados* of SEP in thirty-one states. The second refers to a delegation of authority or functions from a higher institution to a lower one. It also implies the notion of autonomy in decision-making, at least in some crucial aspects. See Gabino Fraga, *Derecho Administrativo*, 7th ed., pp. 134–45, Mexico City, Porrua, 1964.
24. There are many sources where this type of discourse can be found. See Poder Ejecutivo Federal, *Programa Nacional de Educación, Cultura, Recreación y Deporte 1984-1988*, Mexico City, Secretaría de Educación Pública, 1984; and Juan Prawda, *Teoría y praxis de la planeación educativa en México*, pp. 283–91, Mexico City, Grijalbo, 1985.
25. Article 1 of the presidential decree of 20 March 1984 clearly stipulates that all actions of the decentralization of education will adhere to the guidelines estab-

lished by the Federal Government and by legal norms dictated by SEP: *Diario oficial*, Vol. CCCLXXIII, No. 74, 20 March 1984.

26. This assertion is based on field notes and many interviews with SEP officials in Michoacán, Durango, Nuevo Leon and Aguascalientes during 1984–86. In addition, see the SEP working paper, 'Avance de los servicios coordinados de educación pública', issued by the Dirección de Apoyo y Seguimiento, Dirección General de Concertación para la Descentralización Educativa, Coordinación General para la Descentralización de la Educación, August, 1986. This document clearly shows that in ten out of the twelve states analysed, the process of decentralization is only relevant in administrative matters.
27. Alberto Arnaud, paper delivered at Ecuentro sobre [la] descentralización de la Vida Educativa, Mexico City, Universidad Nacional Autónoma de México, 22 September 1983, p. 84; and Gabriel Cámara, 'Educación básica y descentralización, in Luis Aguilar» et al., *Los grandes problemas educativos de México*, p. 85, Mexico City, Universidad Nacional Autónoma de México, 1984.
28. Raby, op. cit.
29. Castillo, op. cit., pp. 468 et seq.
30. Arnalado Córdova, *La clase obrera en la historia de México en una época de crisis: 1929-1934*, pp. 234–40, Mexico City, Siglo XXI/Instituto de Investigaciones Sociales de la UNAM, 1981 and Ornelas, op. cit., p. 55.
31. Susan Street, 'Vuelven los maestros chiapanecos, *México en la Cultura, Siempre!*, No. 1301, 5 March 1987, pp. 40–1.
32. José Angel Pescador and Carlos Torres, *Poder político y educación en México*, pp. 27–32, Mexico City, UTEHA, 1985.
33. This issue has been the central point in many speeches by the leaders of the union. It is documented in Gilberto Guevara Niebla, 'La descentralización de la educación pública', *Nueva Antropología*, Vol. VI, No. 2, June 1983, pp. 5–14; and McGinn and Street, op. cit., pp. 486–7.
34. De la Madrid, 'Protesta de Ley...', op. cit.
35. Jesús Reyes Heroles, *Reunión con los dirigentes nacionales y seccionales del SNTE*, Mexico City, Secretaría de Educación Pública, 1983.
36. Olac Fuentes Molinar, *Polltica y educación en México*, pp. 100–22, Mexico City, Nueva Imagen, 1983; Carlos Monsiváis, 'Muerte, carcel, hambre, agresiones, mitines y marchas: los maestros de Chiapas pagan caro el intento de escapar del poder de Jonguitud', *Proceso*, No. 544, 6 April 1987, pp. 20–3; and Street, op. cit. In March 1987 a dissident teacher was killed in Chiapas apparently by members of Revolutionary Vanguard.
37. Solana, op. cit., pp. 59–71.
38. Fuentes Molinar, op. cit., pp. 100–145; and Olac Fuentes Molinar, 'Educación pública y sociedad, in Pablo Gonzalez Casanova and Enrique Florescano (eds.), *México hoy*, Mexico City, Siglo XXI, 1979.
39. See Fuentes, op. cit., and Street, op. cit.
40. See *Proceso*, No. 543, 30 March 1987, p. 31, and *La Jornada*, 3 April 1987, p. 7, for some examples of these arguments. Interview with Manuel Hernández, leader of Section 7 of SNTE in Chiapas, 27 November 1983.
41. Ma de la Luz Arriaga, 'El magisterio en lucha, *Cuadernos Politicos*, No. 27, 1981, pp. 79–101; Luis Hernandez Fuentes (ed.), *Las luchas magisteriales: 1979-1981*, Mexico City, Macehual, 1981.
42. For the first systematic use of that theory applied to Mexico, see Fernando Carmona et al., *El milagro mexicano*, Mexico City, Nuestro Tiempo, 1970; and for these ideas applied to education, see Martin Carnoy, *Education as Cultural Imperialism*, New York, David McKay, 1974.
43. McGinn and Street, op. cit., pp. 471–90.
44. Mark Bray, Education and Decentralisation in Less Developing Countries: A Comment and General Trends, Issues and Problems, with Particular Reference to Papua New Guinea', *Comparative Education*, Vol. 21, No. 21, 1985, pp. 183–95.
45. Juan Banquicio, 'The Decentralization of Education in the Philippines', Cambridge, Mass., Harvard Graduate School of Education (course paper—mimeo).
46. Joel Samoff, 'The Politics of Privatization in Tanzania', paper delivered at the 31st annual Conference of the Comparative and International Education Society, Washington, D.C., 12-15 March 1987.
47. Jean C. Robinson, 'Decentralization, Money and Power: The Case of People-run Schools in China', *Comparative Education Review*, Vol. 30, No. 1, 1986, pp. 73-88; and Cheng Kai Ming, 'China's Recent Education Reform: The Beginning of an Overhaul', *Comparative Education*, Vol. 22, No. 3, 1986, pp. 255–69.
48. See, for example, G. Sabir Cheema and Dennis Rondinelly (eds.), *Decentralization and Development: Policy Implementation in Developing Countries*, Beverly Hills, Calif., Sage Publications, in collaboration with the United Nations Centre for Regional Development, 1983.
49. This point is clearly expressed by George Psacharopoulos, et al., *Financing Education in Developing Countries: An Exploration of Policy Issues*, Washington, D.C., World Bank, 1986.
50. In a seminar at Harvard University where I was discussing a draft of this article, one of my students suggested a kind of argument based upon cynicism. Such a hypothesis contends that another motive politicians may have for decentralizing education, is that if a policy fails, which happens in many countries, they will be able to share the blame for mistakes and shortcomings. Furthermore, they can always blame the periphery for the mistakes and praise the centre for the successes. I shall try to explore this aspect in the future.

Belize's REAP programme

Zellynne Jennings

What kind of education rural youth in developing countries needs is a question which has been keenly debated. Some argue that rural and urban youth should be exposed to a single system of general education while others advocate an agriculture-oriented education on the grounds that the formal education system has failed to serve the rural areas adequately (Coombs, 1973) and that such an education would help to stem the tide of large-scale migration to urban areas (Balogh, 1966).

While there have been successful attempts at meeting the educational needs of people from rural backgrounds, for example, the Rural University in Colombia (Barber, 1981) many attempts have failed. This article, however, tells a different tale. Its main concern is with an innovation in the Third World which has achieved a good deal of success: namely, the Rural Education and Agriculture Programme (REAP) in Belize. Its major thrust is a discussion of the main factors that have contributed to this innovation's success. More specifically, this article assesses the extent to which REAP is achieving its objectives of developing positive attitudes towards agriculture and influencing young people to remain in rural Belize and engage in agricultural work. Special emphasis is given to REAP's change process which should prove instructive particularly to educational planners in the developing world since REAP is being regarded as a model by countries in Latin America, Africa and the Caribbean (Massey, 1982). An appropriate starting point, however, seems to be an overview of Belize and some background to its education system.

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An overview of Belize

Only 23,000 km² in area Belize (formerly British Honduras) is bordered on the north by Mexico, on the west and south by Guatemala and to the east it faces the Caribbean. Belize's population totals only about 152,000, thus giving it an average of about 7 people per square kilometre. Although Belize is the most depressed of the ex-British colonies in the Caribbean today, yet it is blessed with a cultural diversity unrivalled by any of its neighbours. The Belizeans are a fusion of Creoles (Afro-Belizeans) who comprise some 50 per cent of the population, Mestizos (of Hispanic-Indian origin) who make up some 25 per cent of the population, Black Caribs (descendants of Africans and Carib Indians) and descendants of the Mayans. Other ethnic groups include East Indians, Chinese, Lebanese and some German-speaking Mennonites.

The Belizean economy is centred largely around the sugar industry, citrus farming and fishing, with a modicum of emphasis on tourism. Belize's wealth, however, lies in its land. Although some 40 per cent of the country is arable, only about 10 per cent of the land suited to agriculture is in use. As a result there is a dependency on foreign foodstuffs which causes a drain on the national economy. Subsistence farming, the relative lack of public services,

high levels of unemployment and underemployment have contributed to an exodus from rural Belize to the towns and Belize City. To stem this tide, the Government of Belize has, since the early 1970s, made a special effort to orient its education system to agriculture in an attempts to harness this potential wealth.

Belize's education system

Primary education in Belize is free and compulsory to the age of fifteen. It consists of eight grades of instruction which take the child from infant class through to the equivalent of eighth grade in the American system. There are some 203 primary schools in Belize about 75 per cent of which are located in the rural areas. Based on the British model of academic training, most of the materials for the Belizean primary school curriculum comes from the United Kingdom or the United States with the result that much of the content does not take into account the cultural diversity of Belizean children.

The failure rate for the Belize National Primary Education Examination (BNPE), which selects for entry into secondary schools, is high with almost half of the primary-school population being unable to attain the secondary level. Rural children are particularly disadvantaged with between 40–50 per cent of them never going beyond the eighth grade (Massey, 1982). The prospects of those who manage to get into one of the twenty-two secondary schools in the country and complete their training are limited since opportunities for higher education in Belize are few. A private Roman Catholic College offers a two-year course leading to an Associate of Arts and Science degree, while an extension of the University of the West Indies offers college-level courses in conjunction with the Belize College of Education. Apart from these, there is the Belize College of Arts, Science and Technology (BELCAST) which trains technicians in the upper and lower levels of the economy.

REAP: the change process

REAP was designed with a view to preparing rural children in Belize for a more rewarding life in the countryside and enabling them to participate in the development of the agricultural basis of the national economy to the mutual benefit of themselves and the nation. These aims were to be achieved through the development of a new curriculum relevant to rural Belizean life, the retraining of teachers with a rural development orientation and with skills in curriculum integration. In addition, school farms were to be set up to serve as outdoor laboratories.

REAP was initiated by a unique intraministerial and international agency group comprised of representatives from the Ministries of Education and Sports, Social Welfare and Natural Resources (agriculture), The Cooperative American Relief Everywhere (CARE), Heifer Project International (HPI) and the United States Peace Corps, a group that later formed the REAP Advisory Committee (REAP-AC).

REAP was conceived in three phases (see Table 1) extending over a ten-year period before becoming fully institutionalized. By agreement between the Belizean Government and the international aid agencies, the latter during the pilot phase (July 1976 to June 1979) would provide the bulk of the technical and material assistance and logistical support needed. During this phase, REAP was piloted in eight primary schools in three districts, Toledo, Stann Creek and Belize, and in one secondary school. In addition, a special programme was developed for the training of teachers for REAP schools at the Belize College of Education (BCE). Construction also began of Outdoor Education Centres (ODEC) in each pilot school. These consisted of a new building, garden, crops, rabbit hutches and so forth for the practical application of learning in an agricultural setting. Storage units later replaced the function of these ODEC. A number of these units were built during the 1981/82 school year. HPI

TABLE 1. Major phases in REAP (Belize) change process

Month	Year	Situation analysis
September	1975	1. Advisory committee deliberates rural primary-school problem.
		2. Search for solutions.
		Collective authority decision
	1976	1. Invention of REAP: design.
		2. Government signs agreement for REAP pilot programme with CARE, HPI, US Peace Corps.
		Planning/development/adoption/dissemination
		1. Training course for teachers in pilot schools.
		2. Appointment REAP co-ordinator and manager.
September	1976	3. *Pilot phase* begins:
		Ministry of Agriculture prepares garden sites: construction of ODEC buildings begin
	1977	Workshop for teachers
		REAP newsletter
		'RAP' commences
		Secondary school withdraws
		Workshop to orientate BCE graduates to REAP
		First REAP curriculum guide produced
	1978	Workshop on writing LAPs
		42 LAPs developed
		REAP community council meets with REAP-AC
September	1978	LAPs implemented in schools
	1979	*Let's REAP Together* produced
		First REAP-trained teachers graduate from BCE
		Preliminary evaluation of REAP.
July	1979	4. *District level phase* begins:
		Workshop for pilot school teachers and principals: more LAPs developed
		Revision REAP curriculum guide
	1980	Demonstration workshop for pilot school teachers on use of science laboratory equipment
	1981	Formative evaluation of REAP
		Decision to establish REAP District Councils
		The REAP Experience, radio programme
		First storage units inaugurated
		Printing and publication of 103 LAPs
	1982	REAP District Councils established.
July	1982	5. *National level phase* begins:
		Expansion of REAP
		Transfer of support role from international to Belizean organizations
September	1984	Urban primary school joins REAP
September	1985	Institutionalization: continued expansion of REAP.

supplied, at cost, feeders, wire, chicks, baby rabbits and some feeds. The Peace Corps volunteers served both a technical support/coordinators of the pilot schools and as lecturers for the BCE REAP progaramme. CARE supplied tools, equipment, some agricultural supplies, transportation support and some financial assistance in the construction of the ODECs. The Belize Ministry of Education had the responsibility of training both teachers and principals in the pilot schools and supplying an education officer to manage the project. Training was done largely through workshops the length of which varied from two weeks to two days. Between July 1976 and February 1979 some ten workshops were held at which teachers were trained in the use of equipment and record-keeping. They were also given agricultural-skill training and were introduced to principles in curriculum development such as integration and the writing of performance objectives. Twenty similar workshops were held during the District Level phase.

Learning Activity Packs (LAPs) were developed at some of these workshops. These are outlines of lessons for appropriate grade levels in which teachers are given performance objectives related to a REAP area of study, suggested activities and instructional materials required and reading references. These LAPs are developed around nine areas of study: land and water, soil, health and nutrition, ecology, animals, village study, weather, plants and agricultural practices. These serve as the 'threads' to integrate the academic subjects—language arts, mathematics, social studies, science, the arts and religion.

Various strategies were used to disseminate information about REAP, both to supplement workshops for teachers and principals and to inform the public at large. For example, a newsletter was started in 1977, and a twice-weekly radio programme initiated in the same year. In 1981 another fifteen-minute weekly radio programme, *The REAP Experience*, came on stream. Knowledge of REAP was also disseminated through slide-tape presentations shown to service clubs and the wider community. A REAP agricultural manual, *Let's REAP Together*, was produced in 1979. It provides the basics of tropical gardening, chicken raising and rabbit rearing.

The main thrust of the District Level Phase was the expansion of REAP to the other three districts in Belize, Corozal, Orange Walk and Cayo, with the gradual transfer of much of the technical and material assistance and logistical support from foreign agencies to the government ministries, district-level officials, community groups and service organizations. By the end of the national level phase, REAP was to have expanded to some two-thirds of the rural primary-school system, incorporating urban schools where possible. REAP District Councils took on the brunt of this work. These Councils are located in each of the six districts and are made up of the principals of all REAP schools in the district, district education and agricultural officers, local denominational school managers, and representatives from parents, the government ministries and service clubs. The main purposes of these councils are: (a) to support the establishment and implementation of REAP; (b) to initiate policies and plan strategies for the successful implementation of REAP within the district; and (c) to advise REAP-AC.

REAP's impact

ATTITUDES TO AGRICULTURE AND EFFECT ON URBAN MIGRATION

A study by Edmond (1985) revealed that overall both teachers and students in REAP and non-REAP schools had positive attitudes to agriculture. Labour on the land for Belizeans has never acquired the stigma attached to it in a number of Caribbean territories. In fact, in rural Belize, the *milpa*, or small subsistence farm, is still seen as an avenue to economic stability since any other form of occupation in the countryside is hard to come by. The REAP programme, no less than the academic curriculum in non-REAP schools therefore, reinforces already existing attitudes towards the

land which are a function of the social and economic experiences of rural Belizeans. The positive attitude is reflected in the way in which teachers in REAP schools saw REAP as 'giving students a better idea of agriculture,' 'enabling students to become self-employed', and 'helping families to prepare better diets' REAP teachers expressed the need for the agriculture programme to be subject to formal examinations while non-REAP teachers felt that agriculture was not as important an area of study as the academic subjects and, therefore, needed no examination. Whereas both REAP and non-REAP teachers agreed that 'there is dignity in the world of work for those who work with their hands', non-REAP teachers tended to emphasize such negative features of the REAP programme they had observed as 'parents complain of their children getting dirty' and the fact that there was a lack of varied job opportunities for REAP graduates. REAP teachers, however, accentuated the more positive results of the REAP programme such as the fact that it gave the child a sense of dignity in producing for himself.

Although his sample of REAP school graduates was small, Edmond (1985) found that 80 per cent of them remained in rural Belize involved in some form of agriculture. One REAP student after graduating from high school had returned to a REAP school to teach. To these graduates, the value of having attended a REAP school was largely educational. They had learnt a great deal, they said, about how to grow plants and crops and tend animals. Economic and social advantages were also pinpointed by the graduates. Typical comments were: 'I now grow my own vegetables to eat and sell' and 'I learnt how to make myself a better citizen.'

SOME SHORTCOMINGS

Although in general, students in both REAP and non-REAP schools considered the agricultural programme to be compatible with particularly the educational and social values they cherished, there were some disadvantages that they highlighted. REAP students, for example, complained that in their schools there was a tendency to focus on gardening with not enough attention being given to the academic areas.

There were also some social disadvantages such as the unwillingness of some students to co-operate in farming tasks. The physical conditions of work in school gardens posed serious difficulties. REAP students do not have the proper clothing for agricultural work. Tools and equipment are scarce and often very primitive. Washing facilities in the rural schools are inadequate and cause students discomfort when they have to return to the classroom after working in the garden. The students are also wary of their personal safety because first-aid provisions are minimal in case of injury. Another pressing problem is predial larceny of crops which, on top of everything else, serves as a source of demotivation to some of the students.

Factors contributing to REAP's success

In spite of its shortcomings, REAP has achieved a good measure of success and as the evaluator says: 'The REAP programme model has the unique potential for becoming a real force in the socio-economic development of Belize and giving the young more tools and alternatives to use in forging their own destinies' (Massey, 1982, p. 44). In terms of its contribution to the economy, there is evidence that some increase in local food production has resulted since the inception of REAP (Massey, 1982). However, research evidence discussed in this article together with the evaluator's findings that REAP students perform as well as non-REAP students in the BNPE suggest that REAP to date has largely served educational purposes. Given that REAP is still going strong over a decade since its inception it should prove instructive to examine some of the key factors that have contributed to its outcomes so far.

PLANNING

McGinn et al. (1979) argue that planning played a critical role in the success of the educational reforms that took place in Chile and El Salvador in the 1960s, but that the type of planning did not conform to the 'rationalist' model that international donor agencies usually require in project plans. A typical example of this 'rationalist' approach to educational change is the research, development and diffusion (RD&D) model. In the version of Clark and Guba (1969) the first stage is research of the problem, the main purposes of which are to ascertain the state of knowledge in the area of concern and to determine how this knowledge can be applied to the product being developed. A solution to the problem is then invented and built during the development stage. The innovation is introduced to practitioners in the diffusion stage and then fully institutionalized in the education system in the adoption stage after having gone through a trial phase. The RD&D assumes that there has to be planning on a massive scale over a long time span. Table 1 shows the actual change process involved with REAP. The evaluator of REAP observes that 'instead of a prolonged conceptualization, development and field trial stage, which normally precedes such a project, it was decided to plunge right into the simultaneous planning, development, implementation and evaluation of REAP' (Massey, 1982, p. 44).

Evident from Table 1 is the fact that the change process did not proceed from research but from a deliberation over the problems faced by rural primary-school students by an ad hoc committee (REAP-AC). That a change process does not proceed from research is not untypical elsewhere in the Caribbean (Jennings-Wray, 1985) and in the case of Chile and El Salvador, McGinn et al. (1979, p. 223) observe how 'the reform proceeded on the basis of informed judgement but without careful research'. A further point worth noting is the fact that research is time-consuming and in politically motivated change efforts such as REAP, speed is of the essence since politicians will be concerned with covering as much ground as possible before the next elections. It must, however, be borne in mind that one of the reasons why innovations often fail is because innovators try to achieve far-reaching changes within a most unrealistic time frame of a year or two or less. A period of between five to ten years is regarded as a reasonable time within which an innovation can develop and make some observable impact, (Charters and Pellegrin, 1972). It seems apparent from Table 1 that the initiators of REAP believed in planning on a large scale with a reasonable time frame in mind.

Planning for a trial phase is another good feature of the REAP change process, because it was feedback from the teachers in the pilot school that led to the development of the guide *Let's REAP Together* in a response to their needs. If evaluation is effectively built into the pilot phase of a programme, this can yield invaluable data which can provide decision-makers with information that can be used to shape the next set of decisions. This was clearly so in the case of REAP. For example, the formative evaluation pointed up differences in problems experienced by project schools when REAP was expanded to all the districts, problems that had to do with circumstances pertaining to the particular district. Hence arose the decision to establish REAP District Councils, each of which would have special responsibility for schools in its particular district. The effective functioning of these District Councils has been seen as a key factor to the improvement of REAP's agricultural training policy.

Finally, the use of mass media for building support for REAP needs to be noted because it has contributed in no mean way to developing the positive attitudes on the part of the user system which have repeatedly been observed (Massey, 1982; Edmond, 1985).

GOVERNMENT SUPPORT AND ADVOCACY

Third World countries that have implemented programmes geared to linking education with the world of work and which have achieved a good measure of success have tended to be those in which this thrust in education is an integral part of the political ideology of the government. Cuba and the United Republic of Tanzania are typical examples. Belize is another. REAP has received strong ideological support from government, more specifically the People's United Party (PUP) which formed the government at the time that REAP was initiated. The democratic socialist ideology of the PUP supported the integration of study with the world of work and, in the Minister of Education of the day, REAP had a strong advocate who was able to give it an impetus which has contributed much to its sustainability to date. That such advocacy is crucial to the success of educational reform is attested to elsewhere in the Third World (McGinn et al., 1979; Armstrong, 1984). REAP lost its strong advocacy when the PUP, which had ruled Belize for more than thirty years, was ousted from power in the election of December 1984. In the previous year when attempts to introduce the innovation into the urban areas began, the acronym 'REAP' was changed to mean 'Relevant Education for Agriculture and Production'. The long-term fate of REAP in the hands of the new government remains to be seen.

FUNDING: THE ASSISTANCE OF INTERNATIONAL DONOR AGENCIES

The collective effort of the Government of Belize and international aid agencies has contributed to the level of success achieved by REAP so far because the international agencies have been able to provide both capital and technical assistance which the government of Belize could not have afforded by itself. Hurst (1983) reminds us that many projects have run into difficulty and failed to function well because the aid recipients cannot meet the recurrent costs. Adequate funding of REAP schools has become a pressing problem since the transfer of the support role from international to Belizean organizations began in 1982. Massey (1982) reports that some schools are experiencing difficulties in obtaining supplies of feed, chicks, rabbits as well as farm implements. Ideally, each REAP school is expected to become self-sufficient through the sale of its products, but that objective has yet to be realized. In the meantime, many REAP schools depend on a revolving loan from the Heifer Project International to keep their agricultural projects viable.

The fate of many change efforts in Third World countries has been decided on the question of international aid and technical cooperation. A main reason for the success of educational reform efforts in South America in the 1960s had to do with the fact that these countries 'had more than ordinary amounts of fiscal and human resources available through international technical assistance' (McGinn et al., 1979, p. 222). Although it has long been recognized that the graduates of REAP schools need financial and material assistance in establishing their own agricultural projects, neither the Government of Belize nor the international agencies have the resources to give these youngsters that kind of assistance. Unless the REAP schools can become self-sufficient, or alternative means of financing found, the REAP programme will in the future encounter serious difficulties.

TEACHER PARTICIPATION

Teacher participation from the early stages of the change process has been advocated on the grounds that it would lead to greater commitment to the innovation on their part, higher staff morale, greater clarity about, and a reduction in the initial resistance to, the innovation—all of which are said to facilitate successful implementation (Fullan, 1982).

Participation of teachers in the REAP pilot schools in the development of the LAPs may well have contributed to their positive attitude towards the agricultural programme which has so far been observed. However, there is no doubt that some implementation problems are being experienced. One such problem relates to clarity, particularly with respect to means of implementation. Teachers in REAP schools are having difficulty in articulating work in the school garden with the use of the LAPs and with the more academic subjects they are accustomed to teaching. The policy of REAP-AC is that each REAP student should spend fifty hours per school year doing supervised agricultural practice. Massey found that most schools exceeded this amount of time but they made little use of the LAPs which supply the core of training in agricultural knowledge and skills. In the 1981/82 school year, for example, 16 REAP schools used the LAPs but each school's use varied from 29 to 1 out of a possible 103. Part of the reason for these low levels rests on the shortcoming of the LAPs themselves. The quality of these LAPs have been so much below standard that REAP-AC has had to seek the assistance of subject-matter experts from time to time. What it takes to develop a LAP has been grossly underestimated. The integration of subject areas formerly treated from a purely academic perspective with the theory and practice of agriculture is a task for a team of disciplinary specialists of the highest competence with the able assistance of classroom teachers. Lack of funds to engage such expertise may well prove a stumbling block to the development of an effective agricultural training programme.

Threats to REAP's durability

TEACHER TRAINING

Such a programme cannot materialize, however, unless teachers are adequately trained to implement REAP. Since most of the teachers in the rural primary schools (about 64 per cent) are untrained, they cannot be expected to know how to blend the LAPs with the more academic lesson plans required by the district education officers. One-day or even two-week workshops hardly constitute adequate training for the implementation of REAP. Training approaches to implementation, according to Fullan (1982), need to combine teacher-specific training activities, ongoing continuous assistance and support during the process of implementation together with regular meetings with other teachers and staff. Study of the REAP programme is mandatory for all students at the Belize College of Education (BCE) for one year, but it becomes optional in the students' second year. An investigation into the level of preparedness of graduates of BCE to implement REAP revealed that teachers in REAP schools were no better prepared to implement the integrated curriculum than teachers in non-REAP schools (Thompson, 1982). This has to do in fair measure, with the difficulty experienced over the years in securing the appointment of a Belizean lecturer for the REAP programme at BCE.

THE PROBLEM OF INNOVATION IN A DUAL EDUCATION SYSTEM

Developing countries have been criticized for their dependency on educational models borrowed from the developed world, which makes them susceptible to a powerful form of 'cultural imperialism' (Carnoy, 1984). Belize is no exception. For example, the curriculum of most of its high schools is taken from the United States model. American Jesuits, in fact have a considerable influence over secondary education in Belize and this is due to the deep-seated belief that Church control is fundamental to a sound system of education. Full government control of the education system is not supported by local political parties. Indeed the policy is not for government to assume too much initiative but 'to support and encourage educational progress in plans devised and set in operation by the private institutions' (Grant,

1976, p. 303). This dual system permits the denominations to plan and implement their own programmes with due disregard for the government's social and economic goals. This has been deplored because, for one thing, it led to a situation where 'although agriculture is the key to the country's economic development, it is only the last few years that science has claimed more time in the curriculum than Latin and Bible study' (Grant, 1976, p. 301). The fact that the REAP programme has no planned coherent extension into the higher levels of education does not operate in its favour. As King (1985, p. 4) observes, programmes such as these 'are consequently going to be regarded in different ways from courses that can be developed through high school, college and graduate studies'. It is significant that the only secondary school that participated in the pilot phase of REAP withdrew after one year (see Table 1) largely on account of the incompatibility of the agricultural programme with its academic curriculum. King (1985) also observes that even in countries where primary-school children are actively encouraged to take pride in agricultural productivity, it is noticeable how in their national primary-school examination they are not examined in whatever agricultural skills they have acquired. This is the case with the BNPE which tests in mathematics, language arts, science and social studies. The message which is very subtly communicated to rural youth, therefore, is that the acquisition of agricultural skills in the final analysis is not really important since selection for secondary school is based on academic proficiency.

What is clear is that agriculture-based educational programmes with far-reaching objectives such as equipping students with skills to make meaningful contributions to the agricultural development of the country can only succeed if they are implemented at all levels of the nation's education system. Cuba and the United Republic of Tanzania serve as good examples. On the other hand, dualism in India's education system has frustrated the objectives of its rural education programme (Sinclair, 1977) while in spite of the success that Burkina Faso's rural education centres achieved, the rural people still prefered their children to go to formal primary schools even though they knew their chances of success were minimal (Colclough and Hallak, 1975).

According to *The Manifesto of Independent Belize, 1974–79*, the country prides itself in not intending 'to create by higher education a privileged class of élite citizens who will perpetuate the social injustices of colonialism'. Yet, it may well be found that by having an agriculture-based education at the lowest level of the school system while supporting a Western-type academic model at the higher level, this is exactly what it is doing.

LACK OF EMPLOYMENT-GENERATING STRATEGIES

Although the majority of the REAP graduates in Edmond's (1975) study had remained in rural Belize, it was clearly evident that the talents of these youngsters were not being utilized to the fullest. The most worthwhile occupation that any of the graduates had been involved in was tending plants on a citrus farm. Other graduates had worked at anything from craftwork to baby-sitting. Edmond found that all the REAP graduates who migrated to Belize City did so for reasons related to job opportunities. The sort of assistance that rural youth graduating from REAP schools need to set up their own income-generating agricultural projects neither the Government of Belize nor international aid agencies can offer at present. Belize, however, faces what can perhaps be described as a much more serious problem: namely, that 'the primary resource of the country, its land, remains in the control of large foreign companies that leave much of their land idle and make Belizeans into independent wage labourers on the remainder' (Bolland, 1977, p. 8). REAP graduates can hardly be expected to make a meaningful contribution to the agricultural development of Belize if so much of the country's land is in the hands of foreigners who have no interest in developing it.

So what kind of education do rural youth in in developing countries need? One such country, Belize, has opted for a specially designed rural education and agriculture programme which has so far attained a good deal of success. Although there are some weaknesses in its curriculum, there is no evidence to suggest that overall REAP offers an education which is in any way inferior to that offered by its academic counterpart. REAP students, in fact, perform as well as non-REAP students in the Belize National Primary School Examination. Although there is some evidence that REAP graduates remain in the rural areas, this cannot be attributed solely to the impact of the REAP programme. Job opportunities are very limited in rural Belize and the talents of its youth are being underutilized.

There is no doubt, however, that REAP has fired the spirit of the Belizeans and has captured the imaginations of people in other Third World countries who look to if as a model. The success that REAP has achieved so far can be attributed to a number of factors. Chief among these factors, perhaps, is the strong ideological support it has received from government, particularly through the advocacy of an influential Minister of Education. Effective planning which incorporated such features as a realistic time frame within which to attain institutionalization, strategies for disseminating information about the innovation, speedy decision-making in the early stages with the legal and administrative powers to get these decisions adopted and implemented has also played a critical role. To this must be added the attempt to balance out the more 'power-coercive' strategies with the encouragement of participation by teachers in the development phase of the programme in an effort to achieve more effective implementation. The availability of capital and technical assistance by international agencies collaborating with the government of Belize has also helped to make the success REAP has achieved possible. In addition, attitudes towards the agriculture programme have been positive.

REAP, therefore, has many positive supports, but these in themselves are not sufficient to sustain it in the future. For an innovation to be sustained, threats to its durability have to be warded off. Miles (1983) identifies two such threats: 'environmental turbulence' which usually comes in the form of funding cuts or losses in teacher or student population, and career advancement motivation. Funding cuts in the REAP programme have already materialized since the international agencies began transferring their support role to local organizations. Career advancement motivation is more important than first meets the eye, because the introduction of any change effort into a school system inevitably involves more work on the part of the teachers and principals. And yet, nowhere is any mention made of incentives to teachers and principals in REAP schools. It may be because the People's United Party was a strong believer in 'voluntary co-operative effort' (Government of Belize, 1977). But then there is only so much that volunteers are prepared to do. The observation that 'those who advocate and develop changes get more rewards than costs, and those who are expected to implement them experience many more costs than rewards' (Fullan, 1982, p. 3) seems pertinent here. Other 'threats' that could be mentioned include: (a) inadequacies in the training of teachers for the effective implementation of REAP; (b) a perceived lack of clarity of the innovation by teachers; (c) the persistence of a dual education system in which more importance is attached to academic work particularly at the secondary level; and (d) a lack of opportunities for further education in agriculture for REAP graduates at local level.

Refinement of the REAP curriculum, assistance to the REAP graduates in setting up their own income-generating agricultural projects, the tackling of such problems as predial larceny and the provision of protective clothing for work in school gardens all need to be dealt with if the REAP programme is to be sustained. However, the event which may well decide the ultimate fate of REAP has already taken place: the removal of REAP's strongest advocates in the general elections of December 1984. Conflicts in the ideological commitment of suc-

cessive governments have in the past nipped potentially successful innovations in the bud. But REAP may yet survive that bitter harvest. ■

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Reviews

PROFILES OF EDUCATORS:

WILHELM VON HUMBOLDT (1767–1835)

HISTORICAL CONTEXT

Wilhelm von Humboldt is one of the most fascinating figures in the history of German culture and thought in the early nineteenth century. His original and influential scholarly work in several branches of knowledge—in particular political science, jurisprudence, archaeology and philology—was produced during decades spent as a politician and diplomat in the service of Prussia, in which he distinguished himself by his outstanding organizational skills. He thus combined solid first-rate scientific and artistic attainments with practical political work for his country. His wide-ranging network of contacts and friendships encompassed such prominent contemporaries as Goethe, Schiller, Herder, Fichte, Schleiermacher, F. A. Wolf and Georg Forster—together with many others.

Although his involvement with the Prussian education system and with pedagogical theory in the context of education policy was of brief duration, Wilhelm von Humboldt has gone down in the history of education as a man of epoch-making achievements.

He was one of the founding fathers of the University of Berlin and—together with Süvern and Nicolovius and aided by F. A. Wolf, Schleiermacher and Fichte—he left a lasting imprint on the intellectual development of this most modern of German universities.

It was he who restored to the classical secondary school (*Gymnasium*) its distinctive character as a highly efficient training ground for an intellectual élite. He also played a leading role in training and recruiting professional teachers with sound philological qualifications to serve in those schools.

It was von Humboldt, again, who spearheaded the vigorous reform of the primary-school system and primary-school teacher-training based on Pestalozzi's ideas.

He is rightly viewed as one of the champions of neo-humanist educational principles, which he put into practice during his period of political responsibility for education. These principles are still a force to be reckoned with today, having been adapted to the context of the German Democratic Republic, and are gaining ground in certain circles in the Federal Republic of Germany.[1]

Wilhelm von Humboldt, born on 22 June 1767 in Potsdam, was the son of a Prussian court chamberlain from the old Pomeranian aristocracy. He came

into the world, like his younger brother Alexander the famous naturalist (born in 1769), at a dramatic time in history. The succeeding decades were marked by the bourgeois revolution in France in 1789 and its repercussions throughout Europe, the Napoleonic conquests, the Prussian reforms, the collapse of the Holy Roman Empire, the catastrophic defeat of Prussia in the battles of Jena and Auerstädt, the Treaty of Tilsit, the wars of liberation, the Congress of Vienna and the establishment of the Holy Alliance. It was the beginning of the 'transition from a feudal to a bourgeois society',[2] under the influence of the French Revolution. This was not the result of a single revolutionary act as in France and England, however, but a long and gradual historical process, consisting during von Humboldt's lifetime mainly of piecemeal reforms. Following the dictated peace terms of Tilsit, which reduced Prussia to less than half its previous size and imposed crippling war indemnities, it became evident that the bourgeoisie—shunning popular revolution for fear of a Jacobin dictatorship—was neither economically nor politically mature enough to lead the struggle for national liberation and establish social conditions conducive to a bourgeois-capitalist pattern of development. There was, however,

> a political force that was determined to launch a bourgeois revolution along moderate lines in Prussia: civil servants, officers, landowners and intellectuals recruited on a class basis from progressive elements of the nobility and the bourgeoisie. . . . They attributed the defeat of the old Prussian monarchy to the bankruptcy of outmoded ideas and institutions, recognized the bourgeoisie and the masses as the driving forces of social development—but at the same time counted on an enlightened monarchy for leadership.[3]

Chief among these Prussian reformers were Baron Stein, von Scharnhorst, von Gneisenau and von Hardenberg who, with others, proposed and began to introduce radical administrative, legal, land, trade and military reforms.[4] It was the leader of the reform movement, Baron Stein, who proposed assigning the task of educational reform to Wilhelm von Humboldt.

Von Humboldt's education owed far more to the culture of an enlightened aristocracy than to the tradition of Frederick the Great. The philanthropist Campe was his first tutor, followed by G. J. C. Kunths. Von Humboldt studied in Frankfurt-on-Oder and later at the University of Göttingen, at that time a centre of historical and philological learning. Schlözer was one of his history teachers, and the philologist Heyne[5] introduced him to archaeology, probably laying the basis for von Humboldt's veneration of the classical world. It was in Göttingen that von Humboldt first came into contact with neo-humanist ideas. He immediately immersed himself in Kant's philosophy. During his years as a student he attended lectures on public law, natural law, philosophy, history, philology, mathematics and physics. In Göttingen he also made the acquaintance of Georg Forster, who was later to achieve fame as a German Jacobin and co-founder of the Mainz Republic. It may have been his enlightened humanist education and informed awareness of the events of the French Revolution—he travelled with Campe to revolutionary France in 1789, staying in Paris from 3 to 27 August[6]—that prompted the 25-year-old von Humboldt to write a dissertation whose title indicates a treatise on public law but which actually focuses on the question of the nature of the human being and the development of the personality, adopting an anti-feudal approach. In 1792 he wrote 'Ideas for an Attempt to Determine the Limits of the Effectiveness of State Action', which was not published in full until 1851, after his death on 8 April 1835, at Tegel.[7] During his subsequent activities on behalf of the public education system he was not entirely faithful to the liberal ideas on public education expressed in that paper, which were in serious conflict with the claims of the feudal state order of his day.

In the 'Ideas' he wrote that the state's concern for the positive welfare of its citizens was harmful. It led to uniformity, was damaging to the individual and thwarted 'the development of the human being's individuality and distinctiveness'.[8] Public education lay outside the sphere of effective state intervention, because state intervention imposed trammels on the 'diversity of the education process'.[9] The 'real purpose of the human being'—and this is the core of von Humboldt's argument—'is to develop his or her potential for wholeness in the fullest and most balanced possible way, and freedom is the first absolute prerequisite for this development'.[10] Going far beyond the enlightened idea of the social contract, von Humboldt defined society as a union of free individuals, 'who develop their potential through constant exchanges of their inner resources in mutually beneficial ways'[11] and whose creative activity is limited only by their recognition of the equal rights and intrinsic nature of others.

When he later assumed direct responsibility for the Prussian education system and channelled his energies into keeping it in order under ominous historical circumstances, subjecting it to state objectives as defined by the Prussian reformers, imposing state sovereignty in the education system, and thereby taking for granted and promoting the idea of state intervention, he none the less held firm to certain basic ideas concerning a liberally conceived education system. They were discernible in his idea that members of the community should be responsible, with local authority involvement, for funding basic educational facilities and also, for example, in his insistence that secondary-school headmasters should be allowed a great deal of leeway in deciding on important educational matters.

In his application for the establishment of the University of Berlin (dated 12 May 1809), he wrote that 'the principle that the state is not obliged to concern itself in detail with the education system is certainly, from the standpoint of any consistent political theory, the only true and correct one'.[12] One of his own basic principles was that the entire education system should be maintained through 'its own assets and the contributions of the nation'.[13] The nation would show more concern for the education system if it were also its handiwork and property in financial terms—a conclusion drawn from the Prussian reformers' idea of introducing self-government by elected bodies in local communities. According to von Humboldt the members of a community become more public-spirited when they regard educational improvements as their own responsibility. They show 'more interest in the teaching process itself, prefer the doubtless higher quality of public schooling to private education when their public schools make—albeit moderate—demands on their own purse', and they become more virtuous 'when they are themselves responsible for ensuring, with a certain amount of self-sacrifice, the morality of their children'.[14]

In 1790 von Humboldt joined the Prussian civil service, and served for about a year in the Berlin courts. Following his marriage to Caroline von Dachröden, daughter of a Prussian president of the Supreme Court, he left the civil service and devoted himself to philosophical studies, especially the writings of Kant and English political philosophy.

He travelled to Vienna, Paris and Spain. In 1802 he was appointed Prussian representative at the Vatican and lived in Rome until 1808, in an environment that proved richly stimulating for even more penetrating studies of the ancient world.

THE BUILDER

His work in the field of education policy culminated in a period of brief but highly intense activity. At the end of 1808 he left Rome and travelled via Munich, Nuremberg, Erfurt and Weimar—where he stayed with Goethe—to Berlin, which he reached in January 1809. In June 1810 he withdrew from education policy-making.

By a cabinet order dated 10 February 1809 von Humboldt was appointed Privy Councillor and Director of the Culture and Education Department of the Ministry of the Interior of Prussia. He took up office on 28 February.

His correspondence shows how difficult he found the decision to accept the office. There was a direct link with the political situation:

> King Friedrich Wilhelm III had given free rein to Stein and his fellow reformers as a force he feared and yet depended on to extricate the state and the Hohenzollern dynasty from a severe crisis. Now, however, an unbridgeable gulf had opened between the interests of the King, intent on preserving the dynasty, and the national sentiment of the reformers, who were eager for a popular uprising and the liberation of Germany as a whole [from Napoleon's rule].[15]

The King yielded to pressure from Napoleon and the opposition faction among the Prussian nobility, who felt that their privileges were jeopardized by the reforms—their economic interests in particular by agrarian reform—and had Stein hand in his resignation in November 1808, at which time von Humboldt was on his way from Rome to Berlin. Under the subsequent Minister of the Interior, Count zu Dohna, and Finance Minister Karl Baron vom Stein zum Altenstein (later for many years Minister for Religious, Medical and Educational Affairs of Prussia), the reform policy stagnated. They were unable to push through Baron Stein's proposal for a Council of State that would oversee the exercise of power. But it was von Humboldt's conviction that just such a body was essential, and so the establishment in 1810 of a Council of State contrary to the reformers' intentions could not but be decisive in prompting him to resign his post of Director of the Culture and Education Department.

Baron Stein, in his 'Political Testament', had included the patriotic education of the people among the priorities for any restructuring of society. Von Humboldt tried to fulfil the duties of his office in accordance with that precept when, after much vacillation, he finally decided to obey the call of duty and accept the task.[16] Two months after Stein's resignation von Humboldt wrote to the King: 'The very nature and scope of the undertaking with which I am to be entrusted are such that I . . . lack the courage to take it in hand.'[17] He informed his wife (who was in Rome) that he had declined the new post,[18] and in May 1809 he wrote in a letter from Königsberg, where he was stationed with the entire Government of Prussia, that there was 'actually no government, no authority, no consistency and no unity. Weakness everywhere and many harsh decisions. The fact that there is no Council of State and that we still have cabinet orders instead of real decrees, which can at least be read by all the ministers concerned, is deplorable'.[19] Von Humboldt had no doubt realized that any attempt to implement the kind of education policy advocated by the reformers was bound to run up against serious obstacles.

The Department of Culture and Public Education under his authority was a product of Stein's administrative reform of 1808, which was intended to solve the problem of provincial fragmentation by means of centralization and technical specialization.[20] Its predecessor was Prussia's Oberschulkollegium (secondary-school board), an educational authority established in 1787 and directly responsible to the King, and it

was succeeded by the Ministry of Religious, Medical and Educational Affairs established in 1817. The idea of turning a department of the Interior Ministry into an independent ministry originated with von Humboldt.

In a letter to Goethe from Königsberg, dated 2 June 1809, von Humboldt grumbles about his enforced stay in the town: 'For what, apart from business, could tempt anyone to travel to these God-forsaken parts, to a town for which only Kant could find words of praise because he had never seen any other?'[21] But his letter says a great deal more, confiding to his close friend the programme he had in mind as Chief of Department:

> As you continually taunted me in Weimar with my determination to make people either wiser or even crazier I need have no scruples about letting you know that I am also acting as custodian and manager of the University in Berlin. The elementary schools here have already been strongly influenced by the ideas of Pestalozzi, and I am encouraging the trend. In short, I have plenty to keep me occupied and have immersed myself in these activities more because of the need to see a project through to its completion once one has become involved than out of a sense of confidence and assurance.[22]

Although new to his office Wilhelm von Humboldt succeeded within a very short time in devising ways and means of organizing the Prussian education system that made his term of office one of 'the most important periods in the history of German education'.[23] His ideas sprang from his conviction of the importance of education for Prussia and Germany as a whole, his wide learning, his neo-humanist views and his familiarity with what the philosophers, theologians and literati of his day hoped and desired from a reform of the education system.[24] His work in education policy shows him to be a realistic thinker, a shrewd calculator without a trace of the visionary, and someone quite capable of combining an unmistakably intellectual image with political acumen. His public activity is not at odds with his humanism but 'essentially an opportunity for testing and verifying his ideas'.[25]

This may be gathered from von Humboldt's inaugural address to the Academy of Sciences of Prussia, in which he expressed the view that the most ambitious scientific endeavours would prove the most significant for human life.[26]

Baron Stein, in his memorandum of 24 November 1808 written on the occasion of his retirement from the civil service, had said that his aim had been to ensure that every member of the community was free to develop his or her potential in accordance with moral principles and that the education and instruction of young people was likely to contribute most towards achieving that objective.[27]

Participation by the people in their country's destiny and the education and exploitation of their rich intellectual and moral potential in the interests of regeneration were the humanitarian and democratic political goals of a reform of education necessarily rooted in individual initiative and responsibility, in accordance with Pestalozzi's theory of education.[28] It was von Humboldt who, in line with these principles, 'realized the objective of *universal formal education* in political organizations'.[29]

Department Director von Humboldt's argument for the establishment of a university in Berlin—the preliminary decisions had already been taken before his term of office—was therefore quite definitely political.[30] In substance, von Humboldt affirmed that the confidence Germany as a whole had placed in Prussia's influence for true enlightenment and higher cultivation of the mind was not waning but increasing, very largely as a result of the project of founding a general educational establishment in Berlin:

> Only such higher level establishments can exert an influence even beyond the boundaries of the state. If Your Majesty were now solemnly to approve this project and guarantee its implementation you would be associating yourself most firmly with all in Germany that is concerned with education and enlightenment; you would arouse new zeal and enthusiasm for the regeneration of your states—and at a time when a part of Germany is ravaged by war and another ruled by foreign masters speaking a foreign language you would provide German scholarship with a perhaps as yet unhoped for sanctuary.[31]

With remarkable determination he used all his influence to promote the idea of the university, submitted ambitious proposals for its financing and made plans for close co-ordination of all its activities with the Academy of Sciences, the Academy of Arts and other scholarly establishments in Berlin, in particular the Charité, the Library, the Observatory and the science and art collections. He took steps to ensure that scholars of high repute were appointed to the university.

Von Humboldt's application of 24 July 1809 was approved by the King of Prussia on 16 August 1809. In October 1816 the rector and deans were appointed and the first six students enrolled.[32]

The distinctive character of the Berlin University, strongly influenced by von Humboldt's ideas, was actually to exert a strong impact on the development of German universities in the nineteenth century.

In his unfinished memorandum 'On the Internal and External Organization of Higher Education Establishments in Berlin', von Humboldt defined 'higher-education establishments' as establishments 'whose role is to handle knowledge in the deepest and widest sense of the term and transmit it as . . . the stuff of intellectual and moral development', and to combine 'objective knowledge with subjective development'.[33] Striving for continual expansion of the frontiers of knowledge, in solitude and freedom or among like-minded teachers and students in the

academic community, leads to an understanding of knowledge as a problem as yet unresolved. A prerequisite for every university course was 'adherence to the principle of treating knowledge as something not yet fully discovered and never fully discoverable and as such something to be tirelessly sought after'.[34]

It was inevitable that these views of von Humboldt's should produce an entirely different style of university teaching from that prevailing in the eighteenth century. Attending lectures and taking notes was 'of secondary importance'. Acquiring a university education became an 'independent act in the strictest sense of the term', since the speciality of the university was 'what human beings can find only through and in themselves, insight into pure knowledge',[35] itself seen as a permanent process.

Thus emerged the characteristics of modern nineteenth-century education, whose influence extended well into the twentieth century:

University studies combine the acquisition of knowledge with personality development aimed at cultivating genuine individuality.

The acquisition of knowledge can in turn be understood only as a dynamic and open process in which existing knowledge always reveals the as yet unknown, the next steps in the path of knowledge. In other words the unity of teaching and research and student participation in the research process becomes a distinctive characteristic of university education.

This also changes the relationship between lecturer and student. Von Humboldt wrote: 'University teachers are therefore no longer teachers and students are no longer learners: the latter do their own research, with the professor assisting and supervising.'[36]

The students' striving for knowledge and their ability to acquire knowledge and contribute to its development create new demands in contrast with the wholly passive and receptive attitude of students in traditional eighteenth-century universities. Higher studies become an 'independent act' on the part of the individual, making demands on a person's 'creative potential' and calling for scientific reflection and creative effort.

While defending the idea of the *universitas literarum*, von Humboldt helped to develop a new understanding of the university as an integral whole. Transcending all distinctions between the different disciplines, university education should create a capacity 'to grasp . . . and draw attention to the unity of knowledge',[37] provide a philosophical view of the totality of human knowledge and the human quest for knowledge, and incorporate the multiplicity of the individual in an integral whole that guarantees a universal ordering of life.

Although von Humboldt developed the idea of the education system as a single organism, he entrusted the state with specific responsibility for 'organizing its schools in such a way that they would interlock smoothly with higher-education establishments'.[38] The state should not directly intervene in the universities themselves, however. They were not to be treated like classical secondary schools or special schools, which von Humboldt rejected, in particular the schools reserved for the nobility and military academies. The state was not to make demands on the universities—'which were exempt from all state intervention'[39]—for anything of direct concern to it, 'but to rest assured that if they achieved their ultimate objective they would also fulfil the objective of the state, from a much loftier standpoint'.[40] This liberalist approach was partly responsible for the highly ambivalent conception of academic freedom in the nineteenth century.

On 25 July 1830 the Faculty of Philosophy of the Friedrich-Wilhelm-Universität in Berlin awarded von Humboldt an honorary doctorate for his services towards its founding.

Until the overthrow of the Nazi regime in May 1945 the University had borne the name of the Prussian King, but on 8 February 1949, the third anniversary of its reopening after the Second World War, it was named after the Humboldt brothers. Humboldt University is today the largest higher-education establishment and a centre of intellectual life in the capital of the German Democratic Republic.

A DEMOCRATIC AND LIBERAL PROJECT

Wilhelm von Humboldt had been convinced, ever since taking up office as Director of the Culture and Education Department, that a reform of the education system could be successful only if a relatively self-contained plan for its overall development were designed. For the purposes of his office he felt it was important 'to decide on simple principles, to adhere to them strictly, and instead of diffusing one's energies to act selectively and forcefully, leaving nature—which needs only a push in the right direction—to do the rest'.[41]

In September 1809 von Humboldt drafted the so-called Königsberg and Lithuanian curriculum, an education programme imbued with the spirit of neo-humanism whose aim was to promote 'the nation's moral development, the education of the people, instruction in the skills needed for the country's different occupations and trades, the refinement required by the upper classes and the cultivation of scholarship in universities and academies',[42] thereby serving the political aims of the reformers. For if the 'business of improving the nation' was to be conducted with success it had to be tackled 'from all sides at once'.[43]

The basic principle underlying von Humboldt's

'education programme' is democratic. It is designed for the whole community, and its objectives are the provision of general education, all-round and harmonious personality development—albeit to a level depending on social status and the formation of multi-dimensional individuals. Von Humboldt wrote:

> [The Department] has designed its general education programme for all the people of the nation and is seeking to promote the development of human potential that is equally needed by all classes and on to which the skills and knowledge peculiar to each occupation can easily be grafted. Its purpose is therefore to equip the schools at the different levels of education in such a way as to ensure that all Your Majesty's subjects who attend them become moral human beings and good citizens, according to their condition, and that the instruction imparted is never unproductive or unnecessary for the further career of the person receiving it. This can be done by using a teaching method that is not concerned with what has been learnt so much as with the way in which the learning process may be used to exercise the memory, sharpen the understanding, develop critical faculties and cultivate refined moral feelings.[44]

Von Humboldt's education programme was concerned for the welfare of *all* citizens, the education to be developed step by step within a homogeneous system organically interlinking all education institutions, and a practical form of general education that would encourage individual initiative and serve as a basis for subsequent vocational or professional training to be provided. These were pedagogical and education-policy principles of overwhelming importance, and their relevance has not declined. On the contrary, they are constantly reaffirmed and remain open to further elaboration. This is particularly true of the idea, inherent in neo-humanism and in von Humboldt's educational thinking, of the primacy of general education over vocational education and the literally fundamental role of general education in developing the personality and preparing one for an occupation. According to von Humboldt:

> There are undeniably certain kinds of knowledge that must be of a general nature and, more importantly, a certain cultivation of the mind and character that nobody can afford to be without. People obviously cannot be good craftworkers, merchants, soldiers or businessmen unless, regardless of their occupation, they are good, upstanding and—according to their condition—well-informed human beings and citizens. If this basis is laid through schooling, vocational skills are easily acquired later on, and a person is always free to move from one occupation to another, as so often happens in life.[45]

Von Humboldt's plan for an integrated education system, with its manifest inherent social differences, was based primarily not on organizational principles but rather on an educational idea stemming from the recognition of a series of important steps in personality development. To that extent his 'education programme' is intended to be 'viewed in philosophical terms'.[46] Its intellectual basis is his conception of the personality and personality development, which is greatly enhanced by education. Von Humboldt divides education into three stages: elementary instruction (*Elementarunterricht*), schooling (*Schulunterricht*) and university education (*Universitätsunterricht*).[47] This terminology is somewhat unwieldy for modern purposes and may be translated, in terms of organizational units, into primary school, secondary school and university. These cater for the three stages of development of human cognitive capacity. Elementary schooling, which (cf. Pestalozzi) is concerned with notions of language, number and measurement, mother-tongue tuition, geography, history and natural history, is intended merely 'to instil a capacity to perceive thoughts, to express them, to record them and to decipher them when recorded, and to overcome the difficulty raised by all the principal forms of *designation*'.[48]

The purpose of *Schulunterricht* is to exercise skills and acquire knowledge, 'without which scientific insight and craftsmanship are impossible'.[49] It is concerned with learning and 'learning to learn'[50] and with linguistic, historical and mathematical facts. This covered the basic educational content of secondary schooling.

Lastly, university education—as already noted—made students capable of grasping and drawing attention to the unity of knowledge and gave full scope to their creative potential.

This programme represented an attempt to integrate personality development through education, thereby creating an inner unity, with each stage in the development process linked through an inner continuity with the preceding one and with that possibly lying ahead. It established 'the first and most important principle: the unity and continuity of education in its natural stages'.[51]

It may be described as a democratic curriculum influenced by bourgeois developments, the model of a homogeneous education system along bourgeois lines, inasmuch as the passage from one stage to another is intended to occur smoothly, and each rung in the ladder to contribute to an all-round education so that no branch of education is without its function. The division into secondary schools (*Gymnasien*) specializing in ancient languages and other secondary schools (*Burgerschülen*) giving precedence to the natural sciences was to be replaced by concentration on the natural sciences and mathematics in the lower classes and on ancient languages in the upper classes of secondary school.[52] Intermediate schools of various kinds, which von Humboldt opposed, could therefore be dispensed with.

The weaknesses in this democratic idea and its liberalist approach become apparent when one looks at the real potential for using these educational

methods. Although all children are to be given access to general education the degree of schooling obtained 'must depend solely on the time spent in school and the grade reached'. This 'degree of schooling'[53] depends in turn on how much education the family can afford to pay for. Von Humboldt linked this idea directly with the project of providing an all-round education for everyone.[54]

J. W. Süvern's education bill (1817–19) entitled 'Draft General Law on the Condition of the Education System in the State of Prussia' was the 'climax and culmination of the bourgeois-democratic national educational reform efforts'[55] and the most progressive of all education bills introduced in Prussia in the nineteenth century.[56] The restoration of the feudal state after the Congress of Vienna prevented it from being implemented.

THE INFLUENCE OF PESTALOZZI

For von Humboldt the question of education establishments was the most important national question.[57] Not only higher-education establishments but also elementary schools were the object of his attention and reforming zeal. The basic principles of neo-humanist education—all-round development of the faculties, giving special attention to individuality[58]—were equally applicable, in his view, to elementary education. That was in line with contemporary interpretations of Pestalozzi's method. The educational endeavours of the Prussian reformers coincided with the basic ideas underlying Pestalozzi's elementary method. Von Humboldt therefore used his influence, by sending students to Pestalozzi and promoting an institute run by Zeller, to ensure the rapid spread of Pestalozzi's methods, to gain recognition for the idea of developing the faculties and mentally stimulating education and to discourage dogmatic and formalistic teaching and learning methods in elementary schools. In his 'Report of the Department of Culture and Education to the King' dated December 1809 von Humboldt gave a detailed account of the objectives of the Zeller Institute. The approach adopted in the classroom was not 'that the children should simply be taught reading, writing, arithmetic, etc., but that all the principal faculties of their body and mind should be developed and exercised as harmoniously as possible, so that the other skills followed as a matter of course'.[59] The institute's work consisted in spreading Pestalozzi's method of development of the faculties by offering further-training courses for senior civil servants, superintendents, preachers and rural schoolteachers. In this way, wrote von Humboldt, it would be possible 'to train between 600 and 1,000 teachers a year, extremely disparate in terms of capability of course but all versed in a method that is intrinsically sound and functional and has the additional advantage that even mediocre teachers cannot go far wrong in applying it'.[60] Although these hopes were only partly fulfilled, von Humboldt proved himself, in this case also, a far-sighted organizer whose administrative measures were always based on well-reasoned concepts. The introduction and dissemination of Pestalozzi's basic method for elementary schools, especially the referring of students to Pestalozzi, had a strong influence on the establishment and spread of teacher-training colleges in Prussia and on their intellectual approach in the first three decades of the nineteenth century.

THE GREEK IDEAL

Von Humboldt's impact on nineteenth-century secondary schools was even more pronounced. Friedrich Paulsen has given a succinct account of the objectives of the secondary-school curriculum originally conceived by von Humboldt and worked out in detail by von Süvern:

> The aim is harmonious development of all mental faculties through languages and literature, mathematics and the natural sciences. School-leavers preparing to enter university should have the following qualifications: all-round formal intellectual training, a sound knowledge of the languages of scholarship, a solid understanding of, and considerable skill in, the mathematical sciences and, lastly, a thorough grounding in the natural sciences and history. Such students can choose any course of studies they like and feel equally at home, as they will always possess the requisite intellectual tools. In no field—philology, theology, law, mathematics, natural sciences or medicine—will they be assigned tasks for which they are unprepared.[61]

This was a radical change from the former 'grammar (Latin) school' into a high-quality secondary school preparing students for university.[62] Two conditions had to be fulfilled before this step could be taken, and von Humboldt, with his customary determination, found ways of fulfilling them.

First, less efficient educational establishments ('Latin' schools) had to be excluded from the number of those entitled to send their students on to university. Second, he was instrumental in introducing for secondary-school teachers examination regulations which severely tested their academic experience; this was an important contributory factor to the secularization of secondary-school teaching staff, and changed secondary-school teaching into a career instead of a transitional occupation for theologians. In April 1810 von Humboldt set out his views in 'On Examinations for Secondary Education', specifying the high standards he demanded.[63]

On the basis of these views a new set of examination regulations was published in 1812. Prospective secondary-school teachers were required to take papers in German, Latin, French and mathematics and to translate from and into Greek. Latin was to be used in interpreting the ancient writers.

There were oral examinations in all languages taught and in mathematics, history, geography and general science.[64]

The basic aim of von Humboldt's curriculum for secondary schools was certainly to provide a wide-ranging general education, within which, however, ancient languages played a predominant role. Like all other neo-humanists and the writers and artists of his day von Humboldt was fired with the enthusiasm for the ancient world generated in particular by Winckelmann. Philological studies were expected to have an enduring influence on the development of individuality, given the classical ideal of all-round and harmonious human development. Through the ancient writers one could learn and discover the meaning of all-round personality development and of the harmonious development and use of all one's physical, aesthetic and intellectual faculties; in other words the fusion of all one's unleashed potential in a harmonious whole and totality,[65] as felt and expressed by Goethe and Schiller in poetic terms. 'It is one of von Humboldt's basic convictions that ancient Greece can take over from the whole world the function of the development of individual faculties because it represents universality.' For him the Greeks were a 'standard for all human beings, against whom he gauged a person's or a people's morality and ideality'.[66]

Studies of the ancient languages were viewed as an important means—indeed for a long period as the only means—of training people to think logically. Formal training was regarded as a pre-condition for finding a sure footing in life's many demanding situations and for the rapid acquisition of new knowledge.

Lastly, philosophical studies were intended above all to promote 'the moral refinement of the individual. . . . In the neo-humanist view, therefore, the real purpose of a school specializing in classical languages is the moral stimulus it gives to ideas of the true, the good and the beautiful.'[67] For Wilhelm von Humboldt language is a compelling representation of the 'multiplicity of situations' needed for all-round and harmonious personality development. 'Language is in this respect the most versatile instrument of all, actually representing the many-sidedness of reality that lies closest to the universality of situations',[68] for language bears the imprint of all the thoughts and feelings of a great number of the individuals belonging to a nation. In von Humboldt's view the character-forming value of language, philosophy and literature studies lies in their 'revelation of the rich abundance of human insight',[69] which gives people access to the historical dimension and makes them aware of both their uniqueness and their historicity.

The connection between the reformers' veneration of the ancient world and their political aims consisted in the fact that ancient state structures seemed to represent genuine models of the unity of citizen and state and of individual and society, models that could be used to establish and run a national education system. Ancient history provided an example of democratic statecraft. Emphasis on classical studies involved implicit criticism of the feudal social conditions prevailing in von Humboldt's time and reflected the trend towards bourgeois-democratic political education. 'The social function of the wave of enthusiasm for the ancient world is therefore largely the search for a model capable of successfully opposing an anti-humanitarian environment.'[70] The history of the German secondary school in the nineteenth century shows that these hopes were not fulfilled.[71]

A SCIENTIFIC ADMINISTRATION

Von Humboldt's 'Ideas Regarding Instruction for the Scientific Delegation Attached to the Department of Public Education' introduce another field in which he played a pioneering role. He takes up the Prussian reformers' idea of involving in state administration citizens with specialist knowledge and giving experts a measure of influence over the decisions taken by the authorities. However, the significance of this initiative extends far beyond the political project concerned, inasmuch as a historically new relationship was to be forged between the state's education policy and the different branches of knowledge, through the establishment of a scientific delegation.[72] Von Humboldt defined the function of the scientific delegation as follows:

> It ensures that the general scientific principles from which individual administrative maxims are derived, and in the light of which they must be judged, are borne resolutely in mind, thus enabling the department to supervise and duly assess its procedures individually on the basis of its general guidelines. It also carries out those of its tasks that cannot be accomplished satisfactorily amid the distractions of everyday business and call for geater freedom to engage in intellectual pursuits. Lastly, it is responsible in particular for all examinations falling outside the competence of government religious and educational delegations.[73]

As the department run by von Humboldt 'is concerned primarily with the promotion of general education', the members of the delegation should be exclusively individuals 'engaged in philosophical, mathematical, philological and historical studies',[74] in other words specializing in branches of general education. It was von Humboldt's idea to base the administration on intellectual foundations, a task that was therefore entrusted to the scientific delegation. In this way von Humboldt sought to place science in a position 'in which it could exercise some form of supervision over the administration from a loftier point of view'.[75] F. D. Schleiermacher was the first director of the scientific delegation.

When Baron Stein's idea of setting up a Council of

State at the highest political level to direct and control the civil service in conjunction with the ministers and heads of department failed to materialize Wilhelm von Humboldt submitted a formal request for discharge to the King of Prussia on 29 April 1810, stating with self-assurance that inasmuch as the interim Council of State proposed lowered the status of the office entrusted to him, turning it into 'something different from the office I accepted, I find myself unable to continue occupying it in the future'.[76]

From 1810 to 1819 von Humboldt served Prussia as a diplomat, initially in Vienna. He played a part in important diplomatic events after the defeat of Napoleon: the Congress of Vienna, the peace negotiations and the Congress of Aachen. He then lived in Tegel and Berlin for some fifteen years as a private scholar, devoting himself mainly to linguistic studies.

His brief term of office in the education system, based from the outset on solid philosophical, philological, historical and pedagogical principles and for which we have virtually no records—certainly no complete pedagogical treatise—apart from official documents, strongly influenced the development of the German education system in the nineteenth century. Von Humboldt was aware of this himself on completing his service as Director of the Department of Culture and Public Education. In a letter dated July 1810 he wrote:

> I did what I could and believe I am justified in saying that the education system of this state has been revitalized through my efforts and that although I held office for only about a year many traces of my administration will endure. More than all else, however, I feel I can take personal credit for the establishment of a new university here in Berlin.[77]

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Notes

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3. Ibid, p. 86.
4. See *Preussische Reformen—Wirkungen und Grenzen*, Berlin, Akademie-Verlag, 1982 (Sitzungsberichte der Akademie der Wissenschaften der DDR, 1982, 1/G).
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8. Klenner, op. cit., p. 76.
9. Ibid., p. 107.
10. Ibid., p. 71.
11. Lekschas, op. cit., p. 8.
12. A. Flitner and K. Giel (eds.), *W. v. Humboldt—Werke in fünf Bänden*, Vol. IV, p. 46, Berlin, Deutscher Verlag der Wissenschaften, 1964.
13. Ibid., p. 33.
14. Ibid., p. 221.
15. *Deutsche Geschichte*, op. cit., p. 92.
16. See Flitner and Giel, op. cit., p. 583.
17. *W. v. Humboldt. Sein Leben und Wirken, dargestellt in Briefen, Tagebüchern und Dokumenten seiner Zeit*, pp. 585 et seq., Berlin, Verlag der Nation, 1953.
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19. Ibid., p. 602.
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21. *W. v. Humboldt. Sein Leben und Wirken...*, op. cit., p. 603.
22. Ibid., pp. 603 et seq.
23. 'Nachwort der Herausgeber', in Flitner and Giel, op. cit., p. 584.
24. See H. Deiters, 'Wilhelm v. Humboldt als Gründer der Universität Berlin', *Forschen und Wirken. Festschrift zur 150-Jahr-Feier der Humboldt-Universität zu Berlin*, p. 20. Berlin, VEB Deutscher Verlag der Wissenschaften, 1960; G. Arnhardt, 'W. v. Humboldt—neuhumanistischer Bildungstheoretiker mit beachtenswerter Fernwirkung', *WZ Friedrich-Schiller-Universität Jena, Gesellschafts- und Sprachw. Reihe*, No. 5, 1981, pp. 603 et seq.
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26. See W. Hartkopf, *Die Akademie der Wissenschaften der DDR, Ein Beitrag zu ihrer Geschichte*, pp. 31 et seq., Berlin, Akademie-Verlag, 1975.
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29. E. Spranger, *Wilhelm von Humboldt und die Reform des Bildungswesens*, p. 134, Berlin, 1910.

30. See Deiters, op. cit., p. 21.
31. Flitner and Giel, op. cit., pp. 114, see also p. 233; see H. Kossack et al., *Humboldt-Universität zu Berlin. Dokumente 1810-1985* (ed. H. Klein), pp. 9 et seq., Berlin, VEB Deutscher Verlag der Wissenschaften, 1985.
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33. Flitner and Giel, op. cit., p. 255.
34. Ibid., p. 256–7.
35. Ibid., p. 191.
36. Ibid., p. 170.
37. Ibid.
38. Ibid., p. 260.
39. Ibid., p. 256.
40. Ibid., p. 260.
41. Ibid., p. 211.
42. Ibid.
43. Ibid., p. 212.
44. Ibid., p. 217.
45. Ibid., p. 218.
46. Ibid., p. 169.
47. Ibid.
48. Ibid.
49. Ibid.
50. Ibid., p. 170.
51. Ibid., p. 190.
52. See R. Ahrbeck, *Die allseitig entwickelte Persönlichkeit. Studien zur Geschichte des humanistischen Bildungsideals*, pp. 167 et seq., Berlin, Volk und Wissen Volkseigener Verlag, 1979.
53. Flitner and Giel, op. cit., p. 219.
54. Ibid., p. 175.
55. H. König, 'Zur Geschichte der bürgerlichen Nationalerziehung in Deutschland zwischen 1807 und 1815, Teil 1', *Monumenta Paedagogica*, Vol. XII, p. 348, Berlin, Volk und Wissen Volkseigener Verlag, 1972; see also pp. 266 et seq. and 298 et seq.
56. See Gloege, op. cit., pp. 38 et seq.
57. Flitner and Giel, op. cit., p. 36.
58. See Ahrbeck, op. cit., p. 153.
59. Flitner and Giel, op. cit., p. 223.
60. Ibid., pp. 226 et seq.
61. Paulsen, op. cit., p. 293.
62. See G. Arnhardt (ed.), 'Wilhelm von Humboldt an Carl David Ilgen', *Jahrbuch für Erziehungs- und Schulgeschichte*, No. 26, pp. 208 et seq., Berlin, Volk und Wissen Volkseigener Verlag, 1986.
63. See Flitner and Giel, op. cit., pp. 241 et seq.
64. See Paulsen, op. cit., p. 286.
65. See Ahrbeck, op. cit., p. 161; W. Girnus, 'Humboldts Gedanken zur Gattungsnatur des Menschen', *Das Ideal der allseitig entwickelten Persönlichkeit—seine Entstehung und sozialistische Verwirklichung*, pp. 62 et seq., Berlin, Akademie-Verlag, 1976; C. Menze, *Wilhelm von Humboldts Lehre und Bild vom Menschen*, Ratingen, A. Henn-Verlag, 1965.
66. Menze, *Wilhelm von Humboldts Lehre und Bild vom Menschen*, op. cit., pp. 154–5.
67. Ahrbeck, op. cit., p. 161–2.
68. Menze, op. cit., p. 260.
69. Ibid., p. 261.
70. Ahrbeck, op. cit., p. 166.
71. See K.-H. Günther, 'Einige Tendenzen in der Geschichte des Schulwesens in Deutschland im 19. Jahrhundert', *Jahrbuck 1982. Akademie der Pädagogischen Wissenschaften der DDR*, pp. 117 et seq., Berlin, Volk und Wissen Volkseigener Verlag, 1982; H. Balschun, 'Zum schulpolitischen Kampf um die Monopolstellung des humanistischen Gymnasiums in Preussen im letzten Drittel des 19. Jahrhunderts', Halle-Wittenberg, Martin-Luther Universität, 1964 (Unpublished thesis).
72. See H. König: 'Von der Wissenschaftlichen Deputation zum Wissenschaftlichen Rat', *Das Hochschulwesen*, No. 6/7, 1961, pp. 520 et seq.
73. Flitner and Giel, op. cit., p. 201.
74. Ibid., p. 202.
75. Deiters, op. cit., p. 32.
76. Flitner and Giel, op. cit., p. 248.
77. Quoted in Rüger et al., op. cit., p. 9.

BOOK REVIEWS

DISTANCE EDUCATION

Distance Teaching for the Third World: The Lion and the Clockwork Mouse
Michael YOUNG, Hilary PERRATION
Janet JENKINS *and* Tony DODDS
London, Routledge & Kegan Paul, 1980

Distance Higher Education and the Adult Learner
Ger VAN ERCKEVORT, Keith HARRY
Pierre MORIN *and* Hans G. SCHUTZE (eds.)
Assen/Maastricht, Van Gorcum, 1986

Distance Education in Canada
Ian MUGRIDGE *and* David KAUFMAN (eds.)
London, Croom Helm, 1986

The Planning and Management of Distance Education
Greville RUMBLE
London, Croom Helm, 1986

In their book, Young et al. review experiences mainly in the developing countries and on the basis of which they propose the development of a non-formal education system based on what they call 'radio colleges'.

The book edited by Ger van Enckevort et al. consists of papers on different topics on distance education in the countries of the Organisation for Economic Co-operation and Development (OECD). These papers were presented and discussed at an international conference held at the Netherlands Open University at Heerlen in October, 1984. The book edited by Mugridge and Kaufman is a collection of essays by various authors on the Canadian experience. It 'emphasizes rationale, theory, models and issues in Canadian distance education' (p. 1). And Rumble's book is 'concerned with the planning and management of distance education' (p. 220). It examines issues and elements involved in setting up and managing distance-education systems.

In the chapter on government policies in the Mugridge and Kaufman book, John Ellis defines distance education as a form of educational outreach which has three essential characteristics, namely: (a) the use of carefully prepared mediated instructional materials; (b) feedback to learners; and (c) minimum or no dependence on face-to-face interaction between the teacher and the learner (p. 27). Ellis goes on to argue that, although they help to overcome the barrier of distance in the provision of education, the setting up of remote campus centres or the practice of instructors travelling to remote communities to teach classes cannot be called distance education. This definition suggests that in distance education the learner is physically separated from the teacher. Indeed, it agrees with Holmberg's definition which has been quoted by Farrel and Haughty in their chapter 'The Future of Open Learning' in *Distance education in Canada*. They quote Holmberg as having defined distance education in 1981 as: 'Those teaching methods in which, because of the physical separateness of learners and teachers, the interaction as well as the preparatory phase of teaching is conducted through print, mechanical or electronic devices.'

However, they argue that while this definition is necessary, it is insufficient since it does not reflect the larger context of open learning within which distance education has flourished. According to them, open learning implies 'opening up' traditional education systems through the use of a combination of media in order to meet various educational needs, and, therefore, the future of distance education lies in the evolution of open learning systems. Although the authors do not explicitly state it, they view the concept of open learning broadly to include the removal of not only entry qualifications and age restrictions but also all other barriers created by traditional education systems, such as fixed learning locations and times. They appear to be advocating open distance education rather than contributing to the definition of distance education. Considering open learning in a definition of distance education is then irrelevant. But one would agree with the view that the future success and popularity of distance education systems will perhaps partly depend on the extent to which they will be open in the broad sense discussed above.

Perhaps a better approach to an attempt at defining distance education is that by Rumble. In his book, Rumble first examines the use of the term 'distance' as advanced by Moore in 1983 who expresses it in terms of 'transactional distance', a term which embodies both dialogue and structure in the educational process. This discussion is useful in the sense that it helps the reader understand and appreciate that 'distance' is not just restricted to mere geographical distance between the learner and the teacher. Second, Rumble tells us that in attempting to define distance education, we should consider the diverse practices, systems and projects of distance education. He points out (p. 9) that the common defining element in all of them is 'the separation in space and in time of teaching and learning activities, with teaching generally based on a combination of structured learning materials and the use of intermediaries (tutors, counsellors, 'animateurs') to assist learners in their use of these materials'. This common element is the point of departure and after that we begin to see differences between them. Rumble discusses the factors causing these differences and concludes that 'the problem in trying to establish a definition of distance education lies in identifying the common features' (p. 10). The reader will find Rumble's discussion of the definition of distance education proposed by Keegan in 1980 very helpful in understanding the meaning of distance education. Keegan identified seven main characteristics which he regarded as essential for any comprehensive definition of distance education, namely the separation of teacher and student; the influence of an educational organization; the use of technical media; the provision of two-way communication; the absence of group learning; participation in the most industrialized form of education and the privatization of learning. Indeed, a majority of these principal characteristics are present in nearly all the distance-education projects, programmes and systems cited and described in the other three books being reviewed here.

It is interesting but not surprising that the reasons or factors for adopting or establishing distance education systems in developed countries are different from those in developing countries. This is not surprising because, as Rumble puts it, 'their needs are to some extent different' (p. 47). The two books edited by Ger van Enckevort et al. and Mugridge and Kaufman respectively, through the various chapters, vividly describe and discuss the reasons for adopting distance-education systems in the developed countries of the West. As one reads both books it becomes clear that distance-education systems in

developed countries such as Canada, the United Kingdom and the United States, were established to cater to the educational needs at post-secondary or higher-education level of adults who could not or did not wish to be served by conventional education systems. It is not surprising, therefore, that a majority of well-established and successful distance-education institutions in the Western developed countries offer courses at post-secondary level leading to degree qualifications. A few of them, such as the British Open University, in addition to degree courses, have recently started offering continuing education courses. Discussions of reasons for adopting distance education systems in the developed countries can be found in chapters in Sections 2 and 3 of the book edited by Ger van Enckevort et al. as well as in the case-studies provided in the Mugridge and Kaufman book. Distance-education institutions in the developed countries serve the needs of the adult population by removing the barriers to participation in higher education. These barriers include time, institutional, social and cost constraints.

While in the developed countries the main reason for adopting distance education is to provide a chance to the adult population to acquire post-secondary education, distance education in developing countries is used to solve or alleviate some of the problems in the education systems such as the shortage of school places, teachers and classroom instructional materials, both at the primary- and secondary-school levels. Hence, distance education in developing countries has been used for purposes such as expanding education at these levels, enriching and improving teaching in schools and adult literacy. There is not as much distance-education activity at the post-secondary level as the other levels. Chapter 1 of the book by Young et al. describes vividly the problems in the education systems of developing countries for which distance education is seen as a solution. The contrast between the uses to which distance education is put in developed countries and those in developing countries is rightly summarized by Young et al. (p. 21) as follows:

> In the West it has been used mainly to extend education to fairly small and well-defined groups of people who could not get access to ordinary education. In Africa attempts have been made to use distance teaching on a relatively much larger scale. The aim has not been to expand education to embrace the last 5 per cent of the population, but to offer something to half of the population who never get to school as children, or the three-quarters or more who receive no adult education.

Reading Chapter 3 of Rumble's book, the reader will find that all the factors for the adoption of distance education have been put together very well under the following six subheadings: egalitarianism, modernization theories; rural development and community education; continuing education and the education of adults; totalitarianism (social control and the control of the curriculum); and lowering the cost of education. Rumble discusses these factors with examples. Egalitarianism and the lowering of the cost of education are prevalent both in the developed and developing countries. But the modernization theories (in which the focus is on the need to expand post-primary education or to improve teacher training) and rural development and community education are prevalent only in the developing countries. Examples given show that continuing education and the education of adults mainly apply to the developed countries. Finally, the totalitarian factor has been associated with distance education in very few countries. South Africa, the Islamic Republic of Iran and Colombia have been given as examples. In general, the analysis of these factors does confirm the contrast provided by the book by Young et al., on the one hand, and, on the other, the two books on Canada and the OECD countries.

Related to the issue of the factors or reasons for the adoption or use of distance education is the question of who benefits from distance-education systems both in the developed and developing countries. Rumble does not address this issue directly. He only mentions some of the groups of people who benefit from distance-education systems without actually analysing their characteristics. There is now sufficient information about participants in distance education. Rumble mentions the categories of people who benefit from distance education in the chapters 'The Political Perspective' and 'Establishing a Distance Education System'. Knowledge about the characteristics of the participant in an education programme is very important as it helps to plan an appropriate, relevant and perhaps an effective delivery system in terms of teaching methods and media and other considerations. Therefore, a chapter or a section discussing the characteristics of the various categories of people who benefit from distance-education systems should have been considered in a book dealing with issues and problems in the planning and management of distance education. What does experience tell us so far about the nature of the target audiences? What are the implications for the planning and management of distance education systems or institutions? These questions are as important as looking at the mission and goals of a distance-education institution or system. The case-studies presented in the books by Mugridge and Kaufman and Ger van Enckevort et al. do shed light on the question of who participates and benefits from distance education in the developed countries, such as Canada, the United States and those in Europe. At the Athabasca University in Canada, for example, most students are working adults who study part-time in their communities, a majority of whom are aged between 25 and 44 years. The picture is very

nearly the same at the Open Learning Institute in British Columbia, Canada, and at the Open University in the United Kingdom. The reader will find the following chapters more informative on the participants in distance-education institutions: In 'Learner Characteristics and Success' in Mugridge and Kaufman (pp. 81–6), Dan O. Coldeway concludes in his analysis:

> It is clear that distance education serves a unique population of learners. That population tends to have a wider range of educational background, a wider range of prior educational experience (i.e. have attended more post-secondary institutions before enrolment in distance education), have a wide range of academic ability, and demonstrate a wider range of demographical and personal characteristics (for example, age range, sex ratio, family situations, work experience).

In 'Adults in Higher Education, Lowering the Barriers by Teaching and Learning at a Distance', in Ger van Enckevort et al. (pp. 21–35), Hans G. Schutze concludes: 'Evidence suggests that distance higher education is serving basically the same group as traditional higher education (except for the age of the students): the motivated learner from a middle-class background.' The analysis by Young et al. indicates that the participants in distance education in developing countries are both adults and children who are mainly located in remote or rural areas.

Among other considerations, target audience chosen, the methods of teaching, media selected and support services provided to students in a distance-education system are very much a reflection of what went on during the process of establishing it. The first five chapters of Rumble's book have done justice to discussing the aspects to be considered by those intending to establish a distance-education system or institution. These chapters provide a theoretical base for planning a distance-education system. Information or knowledge about the models of distance education, educational models which underlie particular distance-education systems, the economics involved and the planning process is very useful particularly to the planner. These chapters are coherently put together. However, two observations should be made. First, in the discussion on the systems model of distance education, Rumble discusses in detail the operating activities which consist of two major subsystems, namely the materials and the student subsystems. He does not discuss the regulatory and logistical activities but only mentions them both in the text and in Figure 1.1. This leaves the reader wondering what the details would be under the regulatory and logistical activities according to Rumble. Do the regulatory and logistical activities have subsystems as do the operational activities? Rumble is silent on this question. Second, instead of just stating the cost functions in Chapter 4 the author should have given examples of calculations of costs of perhaps existing institutions using these functions. This would help the reader to understand them more clearly. It is not enough to simply advise that (p. 65):

> Those planning a distance education system in the hope that they will reap economies of scale must ensure that the variable cost per student V in distance system is less than that found in conventional systems operating at a similar educational level; that the number of students N is large enough to bring the average fixed cost per student F/N down.

This point would be reinforced by an actual example worked out comparing two systems or institutions. If not in the text, because that would either make it too long and/or difficult to read, such information could be provided either in the form of a figure or appendix.

Actual experiences of setting up distance-education systems or institutes do reflect the planning considerations discussed by Rumble. The reader can see in the examples of distance education set up in Europe and Canada provided in the Mugridge and Kaufman and Ger van Enckevort et al. books how educational models in the minds of planners affected their characteristics. For example, the characteristics of both the Netherlands and British Open Universities appear to have been very much influenced by the person-centred model of education discussed by Rumble. The book by Young et al. describes case-studies of distance education in the developing countries whose characteristics appear to have been affected by the society-centred model of education. Examples are the mass campaigns and rural forums.

It is very interesting as well as surprising that, except for a chapter in the Mugridge and Kaufman book, none of the other three books addresses the issue of government policies on distance education either in the developing or developed countries. The chapter on government policies in Canada by John Ellis at least sheds light on what the situation is likely to be in the other developed countries which have characteristics similar to Canada, for example, the United States. According to Ellis, government policies which affect distance education emanate from provincial and territorial governments and not the Federal Government, and, therefore, the practice of distance education differs somewhat from one part of Canada to another. His analysis of the situation in Canada leads him to conclude that (p. 27):

> All of this is to say that it is seldom easy, and often impossible, accurately to delineate government policy in distance education.
>
> It should come as no surprise that governement policies in distance education, at least as these are reflected in statutes and regulations, are few and far between . . . so much is occurring with, seemingly, so little official policy.

However, Ellis is quick to caution that it does not mean that distance education activities in Canada take place outside the legal framework. Rather, the laws that govern these activities are general rather than prescriptive. He concludes that there is no need for more detailed and clearer government policy for distance education in Canada. Reading about distance education activities in the United States seems to suggest that, in terms of government policy for distance education, the situation is more or less similar to that in Canada. The planning and management book by Rumble could have dealt with the issue of government policy for distance education directly and in more detail. This is a serious omission. Also Young et al. could have included a discussion on government policy for distance education. So far the impression that one gets from reading about the large-scale distance-education systems in developing countries is that most if not all of these, have been established and are run as they are mainly due to external influence and not as a result of direct government policies. In any case, such policies do not even appear to exist in developing countries. Future books on distance education should deal extensively with the issue of government policy for distance education, especially in the developing countries. Is it necessary to have government policies on distance education? Do such policies exist? If they do, to what extent do they influence or affect the practice of distance education in the face of competing influence from the Western developed countries? These are some, among many others, of the questions that need to be addressed.

Each of the four books reviewed here without being compared with the others makes a unique and useful contribution to the growing literature on distance education. Further, apart from the book edited by Young et al., all of them are recent publications dated 1986, though they use material or information which dates back to around 1984. This gives the reader the confidence that he is reading material that is more or less up-to-date.

The book edited by Mugridge and Kaufman gives the reader a very comprehensive picture of distance education in Canada. While the Ger van Enckevort book gives the reader a fairly comprehensive picture of distance education not only in the European countries but also in Australia, Japan, New Zealand, Turkey and the United States. Reading the two books together the reader gains knowledge of the situation of distance education in the developed countries. I would recommend very strongly to anyone interested in distance education in the developed countries to read these two works together. Both give a number of detailed examples and case-studies which enables the reader to gain deeper insights and knowledge about distance education in the developed world. At the end of each volume one can see the trend towards the use of new information and telecommunication technologies in distance education, such as the computer. In contrast, the work by Young et al., though published in 1980, is still useful for understanding distance education in the developing countries. Perhaps not very much has changed since Young et al. reviewed the distance-education experience in developing countries. Therefore, their analysis of the education problem can be said to be still valid today. The populations of developing countries continue to grow rapidly and provision of educational facilities cannot and is not keeping pace with them. Illiteracy rates among children and adults are still alarmingly high in most developing countries. The problem could even be greater than it was in the 1970s, a period which depicts the situation described in the work of Young et al. Hence, the unique contribution of this book, which is still worth considering seriously in the developing countries, is the suggestion or proposal to develop a non-formal education system based on radio colleges. They have argued the case for it very well, describing the students for the radio colleges, their organization, and what and how students will learn. The proposal is made very persuasively. This reviewer agrees with the authors that 'it is worth trying' (p. 121). I would further agree with their argument that

> there is no requirement of history which forces the poorer countries to follow my leader in this way. They could do something different, and if they did they might find themselves not at the rear of the long column headed by the industrial countries but at its head, moving in a different direction and themselves giving the lead to the rest of the world [p. 129].

Indeed this argument reminds distance-education planners that it is not always true that what works in the developed countries will also work in the developing countries. Something different might work.

However, one major observation can be made on the radio colleges proposed by Young et al. The authors should have included a chapter or a section in the book dealing with a discussion of the impact of this alternative on the existing education systems and on society as a whole. For example, what would be the reaction of society to the suggestion of having two types of graduates, those from the formal school system and those from the non-formal system based on radio colleges? How are the two systems likely to influence each other? This discussion does not come out clearly; in fact it is missing in the book. Finally, the appendices on case-studies and the annotated directory of distance-teaching projects provide very valuable information to the reader. Details not provided in the text can be found here. This is a big plus to the book.

Although Rumble concedes that 'there is no single right way of planning and managing a distance edu-

cation system' (p. 220), he gives the reader a very good discussion of the themes or elements to be considered in planning and managing distance education. It is an important contribution to the literature on distance education in the sense that it has attempted to make explicit what is involved in planning and managing distance-education systems. The book should be read by all those engaged in the activity of planning and managing distance-education systems.

To sum up this review, I can say that all the four books are worthwhile additions to one's library. Further, I would recommend them to all faculties at universities where distance education is part of the curriculum.

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La educación abierta
Gustavo F. G. CIRIGLIANO
Buenos Aires, Editorial El Ateneo, 1983

Teoría y praxis de la universidad a distancia
Luis M. PEÑALVER *and* Miguel A. ESCOTET (eds.)
Caracas, FEDES, 1981, 2 vols.

Open universities have been constantly in the news since the end of the 1960s, when the preparatory committee was set up in Japan for what was years later to become the University of the Air, and when the Open University received its Royal Charter in the United Kingdom. Since then the bibliography on distance education, both in general and as a specific educational method, and its applications to higher education, has been growing apace. Strange as it may seem however, in the Spanish-speaking world activities and experiments in distance education, even at university level, have been much more numerous than the publications on this powerful educational medium. One might say that practice has far outrun theory. When Luis M. Peñalver and Miguel A. Escotet decided in 1981 to publish a compendium of articles by various authors, they found this decision easy to justify (as they said in its 'Presentation' (p. 7)) in view of the virtual absence of any bibliography on this subject in the Spanish language. While this judgement might be challenged, it was essentially true. Two years later Gustavo F. G. Cirigliano was to add a new and significant title to the previous scanty literature; and although the bibliography he lists on pages 57–8 and 175–6 suffers from obvious lacunae, it shows that this is a subject that had previously not really attracted the attention it might have deserved. Later the bibliographical output increased, thanks in good part to the activities of the Universidad Nacional de Educación a Distancia (UNED), Madrid; special mention should be made of the work published by this university following the International Congress held in 1983 on the evaluation of the output of distance education at the higher level; and the well-documented study by D. Popa-Lisseanu, published in 1986 under the title '*Un reto mundial: la educación a distancia*'. Both works will doubtless be reviewed elsewhere in due course.

The two works on which we now focus attention are, despite a few points of convergence, quite different from each other. One firm link which might be noted between them is the fact that they were both primarily inspired by the launching and operation of the Open University of Venezuela, in which many of the authors of the book compiled by Peñalver and Escotet teach, and which has also had on its staff the well-known Argentine educationist Gustavo Cirigliano. The book by Peñalver and Escotet, though its title might suggest a systematic approach, and indeed almost a university or scientific treatise, is not, nor does it claim to be, anything more than a collection of papers very different in form and intent, some of them presented at the Latin American Meeting on New Forms of Post-secondary Education (1976), and others written to celebrate the first Latin American Conference on Distance Higher Education (San José, Costa Rica, 1981); it also contains a few hitherto unpublished articles. In short, it consists of two volumes containing a total of thirty-five articles, all by different authors, except for two written by Peñalver and three written by Escotet. The first volume deals basically with theoretical aspects, and is divided into two parts entitled 'Reflections on the Open University' and 'How the Open University Works'. The second focuses more on practical experience and activities, primarily those in Latin America (already begun in the previous volume) and continuing with other countries elsewhere; it concludes with three articles under the heading 'Problems and Prospects'.

GOING BEYOND 'DISTANCE'

Cirigliano's work, which is much shorter (176 pages), is a combination of a didactic text and an essay. On the one hand, it is clearly intended for use as a textbook for a course or seminar on distance education, including educational objectives and self-evaluation tests for the reader-learner. But its content does not fit into the systematic, precise and well-founded conception of a university publication;

rather it abounds in imaginative ideas and tentative hypotheses of greater or lesser reliability. Taken as a whole it is a unitary and relatively coherent reflection, which does not exclude analysis of practical experience, for example that of the British Open University, the Venezuelan UNA and the Costa Rican and Spanish institutions that go by the same acronym, UNED, though they stand for different titles (Universidad Estatal a Distancia, in the first case, and Universidad Nacional de Educación a Distancia in the second). Cirigliano's intention in comparing these cases is not to offer a comprehensive picture of the way these institutions operate, but merely to recognize the specific 'operational modality' of each of them. Hence this study of cases, or experiences, comes almost at the end of the first part, which, with the somewhat inexpressive title 'Antecedents', attempts to lay the theoretical groundwork that would justify the specific operational model propounded by Cirigliano for this type of university institution in Part II. The author, who seems specially fond of acronyms (he uses a large number, and they are explained on pages 5 and 6), calls the model advocated by him SEAD (Sistema de Educación Abierta/Distancia), following a well-established tradition in certain Latin American circles; Zelaya Goodman uses the same acronym in Peñalver and Escotet's book (pp. 141 et seq.).

Briefly, the first part opens with four preparatory contextual and conceptual chapters. Beginning with adult education and lifelong education, the author links them to open education, a concept that is carefully distinguished from 'attendance education', distance education' and 'self-taught education'. In Cirigliano's view, 'open education goes beyond attendance and distance education' (p. 21), and this convinces him that it will be the education of the future, no matter how long the other types survive. According to him, this type of education should be based on a participatory theory of communication, whose characteristics he does little more than outline. He then surveys the experience of the four institutions mentioned above (which he interprets rather too schematically), and ends the first part with a comparison between the open university and the traditional university, which is also schematic despite a number of imaginative digressions.

The second part is, in my view, the most substantial and interesting of the work. It abounds in ideas and suggestions. The fundamental question it addresses is how to organize a system of open/distance education (p. 61). The author starts from the basis that such a system (SEAD) is 'a form organized so as to make possible open education, which can at the same time be distance education' (p. 63). In other words open education goes beyond distance education, but perhaps because of this, the methodology applied to it can also be appropriate for distance education, just as it could also be appropriate for attendance education. Here, in my view, are to be found both Cirigliano's strongest and his weakest points. His strong point is that he devises ambitious, well-formulated objectives and methodology, constantly linked to the prospective customers (who are more than merely receivers) of the system. His weak point is that many of these expectations are in fact conditioned by distance; the ambitious expectations demand too much from distance education, and probably more than it is capable of producing. However, the author is aware that the model he advocates 'is only a suggestion, and hardly even that', and that 'only practical experience in a specific situation with its own objectives and its own limitations, will make it possible to formulate a really *operational model*' (p. 167). This being the case, there is no doubt that this Argentine author has succeeded in being as stimulating in this tentative proposal as in his other works.

LATIN AMERICAN REFLECTIONS AND EXPERIENCE

While Cirigliano's book consists in establishing and proposing a concrete *modus operandi* in the field of open and distance education, the collection of papers by Peñalver and Escotet has the sole purpose of describing the state of the art in existing reflection and practice, in this case, from the beginning of the 1980s. Naturally, given the wide variety of approaches offered by the various authors, these is obviously a considerable qualitative imbalance. Although most of the authors are sufficiently, and some of them very, well informed about both distance education and the specific characteristics of university education, some appear to have taken account of only one or the other, in some cases only superficially.

The more substantive subjects are treated somewhat unsystematically, and with noticeable gaps, at the beginning of the first volume. The series, opens with a chapter on 'Objectives and Achievements of Distance Education' in which Peñalver provides us with a documented analysis of the development of university institutions in Latin America, in which the author's extensive university experience is revealed and from which the *advantages* to be derived from distance education can be easily deduced. Of the same order is the article written by Peñalver as the tailpiece of the work, at the end of the second volume ('Situation and Prospects of Higher Education in Latin America'). It is significant that at the end of this first article, the author expresses not so much his resolute optimism about the new system as his 'desire' to be optimistic and to see some attenuation of the real problems of Latin American higher education brought about by the current innovations.

Greater scepticism emerges from the following

chapters: a very long one in which Victor Guédez dwells at length on 'the challenges of open and distance education', and another much shorter one in which Emilio Lledó expresses his doubts (and hopes) about the very possibility of 'distance' education :

> Those of us who have been trained in a traditional educational structure, with attendance at courses, may think that we should devote ourselves to improving the school and the traditional university. But in a society today assailed by the mass media . . . perhaps the challenge of education lies in this other wider, less precise territory [p. 65].

Carlos Paldao broaches the subject in much more technical and analytically descriptive terms (Chapter 4), drawing attention to the basic concepts and dwelling on the significance and scope of the new method, always on a note of confidence. The chapter that follows should probably not appear in this section of the work, though its title ('Relevance of Open Learning Systems to Educational Problems') and its first four pages might in principle suggest the opposite. This chapter in is fact an excellent article by Sir Walter Perry on the Open University, its characteristics and the way in which it could help to solve some special problems facing the United Kingdom. It contains highly interesting suggestions that could no doubt be generally applied, but they reflect throughout a particular approach which would be more appropriate along with other case-studies.

By contrast, Miguel Angel Escotet's article in Chapter 6 ('Distance Higher Education and the Paradigm of Instruction and Training') is totally in keeping with the character of theoretical foundation-laying conferred on this section and, despite its relative brevity, constitutes one of the more successful attempts at global systematization in the work. The author divides it into three sections dealing with the aims, processes and structures of distance higher education, and offers a balanced interpretation of what this innovation might be. In his view, there is perfect harmony between what this type of university should aim at and the means and organizational structure assigned to it. Perhaps the most serious objections to Escotet's ideas stem in the first place from his insistence on the eminently educational purpose of this innovative institution (the same purpose as that of any university worthy of the name) and from his refusal to regard it as a centre providing instruction and training. In my view, this opposition between education and instruction—widely shared, incidentally, by many others—has given rise to much misunderstanding, and often results in various types of institutions being asked to do more than they really can. Briefly, we have here an attitude of initial optimism which frequently ends up by becoming pessimistic, a state of permanent dissatisfaction with actions and results. In these cases we should bear in mind the continuing validity of the masterly concept of educational instruction worked out by Herbart; it is this type of action that best defines and characterizes all educational institutions. From this point of view there should be no problem in recognizing that open universities are institutions of instruction or education, in the same way as many good universities throughout the world which work on the principle of attendance by students. This is however of special importance in the case of the new institutions, because it does away with the old problem (one, as we have seen, of concern to Professor Lledó) of whether it is really possible to educate 'from a distance'. It is obviously and clearly possible to teach 'from a distance'; what needs to be clarified is why such teaching should not be fully educational. This is perhaps what Escotet is ultimately trying to say.

The second part of the volume, 'Processes of the Open University', begins with an article by Jaime Sarramona, devoted to the methodology of distance systems, in which special emphasis is placed precisely on the binomial expression teaching/learning. While the author, who is fully conversant with the subject, begins by admitting a degree of progressiveness between instruction/training/education activities, he seems to prefer to talk about distance-teaching systems. As a theoretician and practitioner of education he concludes by upholding direct teacher-student communication as the best possible form of education; accordingly this relationship, which implies the paradigmatic function of the educator's role, is absolutely vital with young children. But at the stage when educational influences are diversified into a multitude of sources, when the subject acquires a degree of maturity, and when the educational institution takes on a more cultural and career-oriented role, the author argues that it is possible, and even necessary, to make the sources of education flexible so as to adapt them to the varying circumstances that converge in the life of each individual. He therefore ventures to describe distance education as a system in its own right, and not merely a substitute for direct teaching (pp. 137–8).

Sarramona's article might also be regarded as an attempt at global systematization. The following articles go more into details such as the administration of the new systems (Zelaya) and their evaluation (Galvis, Contasti-Duchatellier, Fábrega and Escotet). The article by Knaak (Chapter 9) deals with educational technology in general, and does not apply exclusively to distance systems, although logically it might have a special application to them. Contasti-Duchatellier's article is somewhat akin to a case-study, since it attempts to explain primarily the didactic-operational modality of the Venezuelan Open University. In so doing it does not quite fulfil the promise

of the suggested title ('Institutional evaluation: science or conjecture'). The same applies to the articles in this part, also on evaluation, by Fábrega and Escotet. All have a substantial theoretical content, but it is difficult to fit them into a single category that would provide a homogeneous and coherent theoretical base.

With the final exceptions dealt with below, all the remaining articles (pp. 307–717) are devoted to the study of national experiences, both in Latin America and elsewhere. They are disparate in nature and, in any event, are now out of date.

The three last chapters contain a general reflection on university education as a whole, with particular application to Latin America. Ricardo Diez-Hochleitner writes about the future of the university, while Escoter sums up the situation of Latin American open universities and highlights possible obstacles to their development. I have already referred to the final article by Luis M. Peñalver.

In short, we have here two works which, with logical limitations, aptly exemplify the impetus given to open university education in Latin America. It would be a good thing if this promising reality of thought and action were better known in other linguistic areas.

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Le savoir à domicile

France Henri *and* Anthony Kaye

Sainte-Foy, Presses de l'Université du Québec, 1985

Following the two seminal works published in the early 1980s (*Learning at a Distance. A World Perspective*[1] and *Distance Teaching for Higher and Adult Education*),[2] here at last is a book that makes up for the conspicuous lack of comparable French-language reference works on the subject.

France Henri of Quebec University's 'Téléuniversité' and Anthony Kaye of the British Open University co-ordinated and were major contributors to this collection of studies, which reviews key issues and recent thinking in a field that has become one of the cornerstones of educational policy—distance teaching.

The book has come out at a time when there is dramatic evidence of the benefits to be reaped from the new information and communication technologies: technological and commercial benefits, reflected in the telematics boom in France, with over 200 applications in 1986 in the field of education and training alone, mostly involving *vidéotex*;[3] and political benefits, in France and other countries, where decisions to equip lower and higher level secondary schools and universities with new technologies are bound to afford opportunities for distance teaching. At the regional European level, a number of projects relating to the use of the new media in education also reveal an interest in media-assisted instruction, for example DELTA, COMMETT and some elements of the FAST programme.

A FAVOURABLE POLITICAL CLIMATE

Distance teaching is no longer a marginal phenomenon but a widespread trend throughout the institutionalized education and training system. As shown by Henri Dieuzeide in one chapter of the book, this trend is partly due to the educational crisis of the past twenty years, which has led to the stagnation or even in some cases the decline of public financing of education in spite of a twofold increase in enrolments. Moreover, the prevailing social conditions make it desirable to give increasingly wide sectors of the population access to education at many different times of life. Accelerating technological change, obsolescence of traditional techniques, unemployment and the needs for redeployment make it necessary to treat retraining and lifelong education as new social norms.

Thus taken in hand by the political authorities and girded round with numerous advantages, distance teaching is all set for a promising future. Its theoretical assets are obvious, for example the possibility of lowering the unit costs of students, its function as a source of innovation and motivation, presenting an alternative to traditional education which is sometimes viewed as old-fashioned and out of touch with everyday life, the rapidity with which it can be introduced, making it compatible with a government's period of time in office, etc. Other advantages include the technological stimulation of industry by the emergence of a new market, the development of training in the new technologies and educational communication, and hence the development and modernization of social practices in the field of education.

However many the advantages, we must remain aware of a number of uncertainties and risks. Dieuzeide lists the problems that may act as a brake on unduly optimistic development plans. Perhaps one of the foremost is the difficulty of creating new institutions capable of changing old and superseded educational relationships and of preventing distance teaching from 'ossifying into a means of—distributing inadequate materials for obsolete tasks'.

THE DINOSAURS OF DISTANCE TEACHING?

The influence of organizational structures is made particularly clear in a chapter by Anthony Kaye, which describes one of the basic contradictions of distance teaching. This is that one of its major advantages (offering wider public access to knowledge) frequently depends on mass production based on industrial practices and tertiary sector organizational models: publishing, press, radio and television.

The rationalization of procedures, the fragmentation of tasks and the use of marketing techniques make interdisciplinary co-operation difficult owing to assembly-line work, corporatism, the inevitable decline in the level of teacher responsibility and the standardization of curricula and expectations. Hence the risk of large-scale reproduction of the traditional teacher-pupil relationship based on moral and intellectual authoritarianism, with particularly undesirable effects in an adult-education context.

As an alternative to the centralized structures existing in a number of countries, the author studies the comparative advantages of mixed institutions with centralized materials but decentralized instruction and other forms of organization, for example federative or inter-institutional structures.

Stressing the importance of decompartmentalized structures, flexible procedures and network activities, he favours a type of organization capable of accommodating different methods and rates of progress so as to cater for the extremely wide range of people enrolled in 'open' universities.

AN EDUCATIONAL MODEL FOR DISTANCE TEACHING

Returning repeatedly to the theme of the interrelationship between organizational structures and teaching methods, France Henri and Anthony Kaye advocate an educational model whose central values are responsibility and maximum self-reliance on the part of students. This model is heralded at the beginning of the book, which is described as being devoted exclusively to adult distance teaching.

Moreover, the ability of these adults to achieve self-reliance and the psychological or social constraints that might prevent them from making full use of the independence and responsibilities involved are not questioned. Subject to this reservation, the part of the book dealing with the pedagogical aspects of distance teaching sheds useful light on a number of questions, including the planning of distance courses.

The team-work required for the planning and production process makes it necessary to clarify the basic values to be imparted in the course. These values take shape around four local points which determine specific choices in each case: epistemological choices (specification of knowledge to be imparted); pedagogical choices (types of learning processes to be favoured); instructional choices (definition of concepts and their interrelationship); and media choices (types of media to be used). Through the adoption of an iterative rather than a linear approach, the negotiations between the team members on the values relating to the different focal points clarify and offer guidance for the work of planning.

This approach based on focal points in the learning process and on the underlying values seems to link up with a concept derived from the basic concerns of any process of communication, as the present writer has demonstrated in her own work:[4] in my view, epistemological questions relate to scientific content reformulated in terms of information to be imparted, pedagogical questions to forms of relationship and degrees of influence between the learner and the human or material source of knowledge, instructional choices to all kinds of integration problems, and media choices to efforts to achieve optimum facility and efficiency. These seem to be the concerns of any communication process, although the order of priority may vary in terms of the situation and the partners involved.

As the main concern of distance teaching is probably to facilitate the learning process in view of the constraints usually experienced by adult learners, the important role of the media may be attributed to this priority objective of efficiency. As regards the other concerns (information, relationship, integration), different orders of priority probably also exist according to the target-group and the type of learning concerned.

One chapter actually addresses this question of different student motivations and aspirations. The authors, Alistair Morgan and Elisabeth Taylor, try to reach a better understanding of the learning process by placing it in the context experienced by the student. 'Learning always occurs in a given context [which] cannot be described independently of the learners but always through their experience.' The role thus assigned to the context and the phenomenological approach underlying the authors' methodology provide a realistic framework for the results presented. They distinguish three student profiles, five learning concepts and two strategies, two levels of understanding and five types of perception of achievement. It is to be regretted that this very interesting theoretical work was not carried further in order to bring to light the interrelationship between the different dimensions. From a purely phenomenological point of view, this approach is certainly justified by the insight it gives into each student. However, one would like to see a more structural approach being adopted in further research into the connections between learning profiles, concepts and strategies, levels of understanding and perceptions of achievement.

This section on the educational process closes with a review and comparative assessment of different forms of supervision. The author, Dominique Abrioux, insists on the need for supervision because, in spite of the assumption of independence 'it has to be admitted that learning can never be completely self-reliant'. The degrees and types of supervision vary considerably from one country or institution to another. Might it not be thought that they should also differ for different categories of student? But there appears to be no overall typology available here as yet.

USE OF THE MEDIA

The third part of the book studies the elaboration of messages through the media: printed matter, audio-visual materials and telematics. Following a discussion of the tricky question of the specific character of each medium, three chapters deal with their appropriate use in each case.

The universal predominance of printed materials is due to the many different qualities of this medium. A major structuring of texts is, however, necessary and the author, Françoise Landry, proposes for this purpose an interesting list of variables and a systematic approach. The variables, of which there are four, tie in with the four focal points of course design and also with the basic concerns referred to above: the discipline or field of knowledge (cf. information), credibility in the discipline, that is to say the objectives pursued by a line of argument or a demonstration (cf. questions of influence), characteristics of students, in particular their past achievements and experience (cf. degree of intergation of new knowledge into old knowledge) and lastly pedagogical choices (cf. presentation of texts for ease of learning). In the case of the last variable, Françoise Landry considers at length the criteria of readability, the various indices of a text's accessibility and methods of presentation.

Another chapter deals with the audio-visual media. Geneviève Jacquinot presents a wide-ranging survey of the questions involved. After giving a lively account of the crux of the debate between technologists and educationists and between iconophobes and audio-visual enthusiasts, she draws up a list of the types of learning process that tend to be facilitated by these media and stresses the importance of the social context and the disciplines in question for the choice and use of a specific medium. This differentiation of situations, which it may be said have not yet been fully appraised, has, however, been the subject of debate for some time, as the author notes. In 1975 Marquis proposed two models: one more interactive and the other more self-reliant, depending on whether the course tends to have social implications or is geared towards the acquisition of knowledge. The type of course is certainly not the only factor influencing the choice. Hence the author's apt remark that the consumption of a product 'is not unrelated to the socio-cultural practices of individuals'. To speak of the impact of the media and of their distinctive nature is to point to an explanatory system of linear causality. But in reality 'the question is not so much what the media do to the public as what the public make of the media'. In particular, there is a need to know how learning takes place in different educational contexts, including those using audio-visual media as teaching aids. When these questions have been more thoroughly explored, audio-visual media will no doubt be used to a greater extent and with more success.

Thérèse Lamy closes the book with a plea for information technology designed as a 'socially interactive tool'. As it gives access to a network, telematics must necessarily tend towards a model based on small groups and on the non-institutionalization of access to knowledge. The author is opposed to a 'Cartesian' view of learning based on the distinction between knowledge and non-knowledge. She prefers Piaget's principle according to which learning takes place solely through the transformation of reality. The ideas she develops are predicated on an egalitarian encounter between peers, 'participation in the conversation of humankind', and hence on a co-operative approach to education. According to the author, 'the book's basic postulate of recognition of and respect for adult independence' is an ultimate state unattained by a large number of individuals. If telematics is made a socially interactive tool, it can become an educational tool, a means of emancipation leading to genuine self-reliance.

A DECIDEDLY OPTIMISTIC BOOK

As no systematic evaluation has been made of distance-teaching projects, there is as yet little information available concerning the real effectiveness of this method of learning. But in spite of this and in spite of the economic or organizational difficulties encountered, distance teaching is ceasing to be a fringe concern. Adopting a forward-looking approach, this book sets out the preconditions for its development, proposing a model that holds together in spite of the book being composed of contributions by different authors. This model is based on the extensive use of new technologies which, in the authors' view, should be conducive not only to participation, co-operation, democratization but also to independence and self-reliance on the part of the populations concerned.

The model is also based on a humanist approach to education. The authors acknowledge its rather 'Utopian' character. However, it has the merit of clearly demonstrating the links between the different levels concerned—the political, economic, organiz-

ational and pedagogical levels and the media—thus providing a comprehensive account of the potential of distance teaching.

The book tends to generalize in some respects and only occasionally seeks to draw attention to differences between learners and between learning contexts. The student tends to become a somewhat abstract entity, an 'average' learner who might usefully have been described in greater detail.

In any case, the great variety of levels of analysis and the relevance of certain new departures raise a number of major questions that require further study. These hinge on the learning processes prevailing in different educational contexts, the links between contexts, situations and different types of learners and present and future users of distance teaching and lastly analysis of situations which, according to the authors, 'decision-makers and planners in the field of distance teaching are ill-equipped to undertake'.

Who will engage in this research? What researchers, particularly in France, can follow on from where this book leavers off? The two authors, assuming a truly mediatory role, have thus presented us with a challenge that we shall have to take up.

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