NEW USES OF MASS COMMUNICATION FOR THE PROMOTION OF ECONOMIC AND SOCIAL DEVELOPMENT*

Written for Unesco by

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1. Communication, as used in this paper, refers to the circulation of knowledge and ideas in human society. It is thus conceived of as a social process, rather than as machines, vehicles, roads, or electronics. By national development we mean the economic and social changes that take place in a nation as it moves from a traditional to a modernized pattern of society: changes associated with division of labour, growth of industry, urbanization, growth in per capita incomes, and preparation of citizens - by literacy education, and information - to participate broadly in national affairs. Our intent is to outline some of the relationships between the development of effective communication and the progress of national development, and in particular to suggest ways in which the new knowledge and new technology of communication can help to speed economic and social growth.

2. We intend to discuss these relationships in such a way as not to restrict our argument to any one economic or political system. The development of effective communication seems to be an essential of national development regardless of the political auspices and the economic model. It has appeared to play very much the same part even in very different systems. Therefore, we are going to try to talk about aspects of communication development that are not system-bound for, if nations can share communication experiences with each other, then the new States need not repeat the mistakes of the older countries, and new communication systems and policies can rise on systems and policies that have gone before.

COMMUNICATION'S PART IN NATIONAL DEVELOPMENT

3. Social and psychological factors have been assumed in most models of national development. These models have usually taken for granted such elements as "the will to develop", thrift, the rapid flow of knowledge, and the ability to make co-operative plans and decisions. But during recent years, planners and scholars have looked more explicitly toward the "human factors" that would help them to understand, plan for, and stimulate the pace and pattern of economic development.

4. They have been seeking what Hirschman (1), called a "binding agent", - something to organize and achieve co-operation among the many factors, resources, and abilities needed for successful development, and they have looked for such an agent chiefly in the minds of men. "The course and rate of politico-economic development in a country", said J.J. Spengler, "depend largely upon the contents or elements present in the minds of such country's inhabitants, and above all,

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on the contents of the minds of the elite". (1) Max Weber found it helpful to relate rapid economic progress to social norms and ideology. (2) Hirschman found his "binding agent" in a kind of "growth perspective". An American psychologist, D.C. McClelland, looked into the motivational patterns of economic development, and wrote in a tone reminiscent of some of the things Lenin said on the same topic. "There is no substitute for ideological fervour. A country or at least a significant portion of its elite has got to want economic achievement badly enough to give it priority over other desires". (3)

5. If economic development depends on "the content of minds", "a growth perspective", "ideological fervour", and the like, then it must also depend on communication, because these states of mind must be communicated to people who do not have them. Indeed, a whole set of attitudes, understandings, and skills, appropriate to economic development and social change, must be communicated over a developing country, and in many cases to people who are ignorant of them, uninterested, or resistant. If a nation, rather than merely an advanced society, is to be built, then the necessary knowledge of public affairs, the concepts of national loyalty, and empathy for fellow citizens must also be communicated so that people will be able to take part in national affairs. Furthermore, if a nation is to play a significant part internationally, communication must weave the New State to other States, and the necessary understandings of international events and relationships must be communicated to the people. Thus it is clear that national development involves serious and significant communication problems, which we shall now look at in more detail.

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6. In the early stages of national development, there are likely to be great crevasses in public knowledge and attitude that must be bridged by communication. Some of the largest of these lie between the elite and the mass of people. The elite tend to be cosmopolitan; many of them have been educated in advanced countries, and they have absorbed modern ideas and concepts of change. The mass, on the other hand, are likely to live in an unchanging world of tradition and local interest; they are largely illiterate, versed in lore rather than theory, unaccustomed to learn systematically, unfamiliar with modern technology, in fact hardly touched by modern life. In many cultures the people believe it is inappropriate for them to have political ideas and opinions. In some cultures work is not a valued activity; the idea is to do as little of it as possible. Many peoples find it very hard to understand why the path to better and easier times begins by tightening one's belt and working harder for less. We do not mean to imply that the elite are always a force for change, and that the mass are always resistant to change. In many developing countries, once the possibility of change has been widely communicated, the chief impetus to change lies within the mass of people. In any case, however, there is likely to be different understandings of change, and different concepts of desirable change, within different groups of the population, and communication must bridge these differences.

7. The task of a developing nation is to transport over the crevasse skills, attitudes, and concepts which will enable the people of the country to move out of a traditional society and to participate effectively in the modern world. Both the leaders and the people must travel across the gaps until they are joined into a nation.

8. There are other essential uses of communication in the process of national development. The elite themselves are likely to be far from agreement. In a new State, the period just before independence is likely to be one of great unity among the leaders. Once the common goal of independence is gained, however, centrifugal forces are released, as they were, for example, in...

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India, in the Congo, and in Algeria. If the country is to remain united, if development is to proceed efficiently, there must be institutions and programmes of communication for reaching consensus.

9. We are not going to elaborate on the consensus function of communication, nor of certain other functions which the communication system of the new country must be developed to perform. But it does seem necessary to refer to the function of communication in balancing off the disintegrative forces of economic and social development. As an Italian labour leader once said "there is likely to be great danger when the hopeless begin to hope". The very idea of change, introduced into a country where for centuries people have felt themselves controlled by inheritance, tradition, and fate, is likely to be a shock. Intelligent and skillful communication must smooth out the levels of strain, soothe the impatience without destroying hope, maintain a "growth perspective" that will accommodate a long-term future orientation and withstand temporary disappointments.

COMMUNICATION RESOURCES IN DEVELOPING COUNTRIES

10. In a modern society, much of the burden on communication is borne by the educational system, the mass media, and the social organizations. In many of the developing countries, however, these institutions are themselves undeveloped. About half of the people in the world, and well over half the people in developing countries, are not literate. Less than half of the children of primary school age in developing countries are in school; and only a tiny fraction of those beyond primary age are able to go to secondary school or to a university. In Nigeria for example, where educational opportunities are better than in many developing countries, over 70% of the 93,000 teachers in primary, secondary, and teacher-training schools are untrained. In a series of continental conferences, Unesco has been assessing the world-wide cost of training the teachers, building and equipping the schools, furnishing the teaching materials, and operating the educational systems which economic advancement calls for in the developing countries. The cost is staggering. It has been calculated, for example, that merely to achieve universal primary education in Ethiopia would require three times the present total national budget. The cost of the present five-year plan for raising the primary school enrolments in Africa from 40 to 51%, and the secondary enrolments from 3 to 9% is estimated at $1,250 million of which more than $1,300 million must come from outside Africa. The needs for Asia, Latin America, and the Middle East are comparable.

11. Unesco has suggested that a minimum standard of mass media growth for developing countries might be to provide for every 100 of their inhabitants:

- Ten copies of daily newspapers,
- Five radio receivers,
- Two cinema seats,
- Two television receivers.

This is a modest objective. It is far below the achievements of well-developed countries. In the United Kingdom, for example, the circulation of newspapers is 58 per 100 people; in the United States, there are nearly as many radios as people. But 100 States and territories in Asia, Africa, and Latin America fall below even the "minimum" standard suggested by Unesco. These countries have a combined population of nearly 2,000 millions, so two-thirds of the people of the world lack, as Unesco says in its report to the United Nations, even the "the barest means of being informed of developments at home, let alone in other countries. In point of fact the actual situation is even worse because the above criteria do not take into account the distribution of facilities within countries. In many underdeveloped countries, over 60% of the population live in rural districts, whereas the facilities for information are concentrated in a relatively few urban areas. At least 40 sovereign States in the underdeveloped areas have no national news agencies, and must

(2) These figures are based largely on Unesco sources. For the Nigeria figures, see Adams, S.C. Jr. Nigeria where education has not kept pace with politics. Phi Delta Kappan, 45, 162 (1961).

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rely on the five world agencies both to bring them news and carry away news of them. All the developing countries together use less than 20% of the world's annual consumption of newsprint.

12. The effect of underdeveloped information channels is to isolate a population so its members are hardly aware of the outside world, and inadequately informed of the problems and policies of their own country. In a careful study conducted recently in a Latin American country, it was found that over one half of the rural adults could name neither the outgoing nor the newly elected president. About 95% could not name Eisenhower or Castro. The "big issues" of the day - the cold war, the nuclear bomb, developments in Cuba, and the like - brought response from only a very few. A study conducted in a South Asian country, measured the diffusion of modern ideas through villages at different distances from a metropolis. In the farthest village no one except the head man knew who was the ruler of the nation. Except in the two closest villages, no one knew anything about other countries, about such ideologies as communism, socialism, or capitalism, about important recent international events, or who were the nation's friends or enemies. In each village, at least some of the people knew that the country was no longer a colony, but the recent partition of the country was unknown in two of the seven villages and known by only a few in two others. Some people in six of the seven villages knew of the five-year plan, but thereafter knowledge of new policies trailed off rapidly. People in only four villages knew anything about community development projects. This is not to suggest that there are no good reasons, in geography and economics, why these people are less well informed than we should like to see them; but merely that, until these people have a great deal more information than now, they can hardly be mobilized for a grand effort toward national development.

13. To build up these information channels, the mass media, like the schools, will require a great amount of construction, equipment, materials, and training. Unesco has estimated, very roughly, that an additional $3,160 million, spent between 1962 and 1975, would be required to bring the media of the developing countries up to the minimum levels mentioned above.

14. Figures on the growth of social organizations such as political parties, professional and business groups, adult education organizations, labour unions, youth organizations, women's groups, and so forth - in the developing countries are not so readily available as figures on the schools and the mass media. Nevertheless it is clear that these, also, are much less fully organized than in the advanced countries.

RELATION OF COMMUNICATION DEVELOPMENT TO ECONOMIC DEVELOPMENT

15. There is a striking correlation between the level of economic advance, on the one hand, and the level of education and mass media, on the other. The higher the per capita income, the higher is the level of literacy, the percentage of school age children in school, and the circulation of mass media to the public. This relationship may be illustrated by comparing Tanganyika, which is relatively underdeveloped (per capita income under 100 dollars, industrialization low) with Australia (which is well advanced, with per capita income over 800 dollars, and considerable industry). The two countries have about the same population, but Australia has nearly 900 times as much newspaper circulation, and perhaps 750 times as many radio receivers as Tanganyika. In South East Asia, as it is defined by the Economic Commission for Asia and the Far East to include the 28 countries between Iran and Korea, there is but one country in which communication is relatively advanced. This is Japan. But Japan has 77% of all the newspaper circulation in those 28 countries, 73% of all the radio receivers, and 97% of all the television receivers.

16. Correlation, of course, does not prove causality. The fact that income, industrialization, and urbanization all rise with literacy, education, and mass media development, does not prove that one group causes the other to rise. On the contrary, it is quite clear that an interaction goes on between them. Until a large number of people learn to read, there is an insufficient market for newspapers; but until newspapers and other reading material are easy to get and rewarding to read there is not likely to be a significant increase in literacy. A literate man is able

(3) For recent figures on media development, see World Communications. Unesco, Paris (new edition, 1962).

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to acquire more complex skills, earn more money, purchase more communication. More money in circulation and larger potential markets make it possible to expand the mass communication system, buy more printing presses and more newsprint, train more editors and printers, bring in more wire service news, teach more people to read.

17. In both communication development and economic development it is hard to take the first steps. (1) There is a critical point at which the enormously powerful interaction of communication and economic development begins to take hold. The question, of course, is whether the nation can make the hard climb to that point. Both in economics and in communication, the first part of the path looks pretty hopeless. On the economic side, the risks are too great to attract the entrepreneur. The labour force is not trained. Capital is lacking. The population is increasing faster than productivity. Most of the population may be a relatively inert mass, neither informed about nor of a mind to co-operate with the national development plan. On the communication side there is the equally difficult outlook described so eloquently at Unesco's Bangkok Conference by the Indian editor Mr. A.R. Bhat. (2) Low literacy greatly reduces the potential audience. Low industrialization reduces to almost nothing the potential advertising support. The resultant low income reduces the ability of the newspaper to buy newsprint, to bring in wire news, to obtain better presses, or to hire better qualified reporters. To break out of such a self-maintaining set of limits is not easy.

THE ADVANTAGE OF COMING LATE - THE AVAILABILITY OF RESEARCH AND DEVELOPMENT IN THE INDUSTRIALIZED COUNTRIES

18. Even with the best will and the greatest determination, developing countries find it difficult to assemble and allocate all the resources they need to develop adequately the channels of communication within their society. They are short of everything - teachers and the facilities to train them; mass media, technicians and production staffs to operate them, and equipment to make them effective; teaching and informational materials. Therefore, anything they could do to multiply these scarce resources and make them more widely useful, would be advantageous and important in a degree that industrialized countries might find it hard to appreciate.

19. In this respect, it is by no means a disadvantage not to be the first nation to develop economically. Each generation of nations builds on the experience of the generation before it. The younger nations can avoid some of the mistakes of the older ones. They can short-cut many of the painful steps of industrial and engineering development. Their goal can be, not to do as well as the nations before them, but rather to do better; for they can choose what they want from the storehouse of international experience, and use their creative energies, not for developing the same thing over again, but for adapting it and improving on it.

20. It is not necessary to choose between the older and the newer technology. Just as a developing country has uses for the wagon and the automobile even after it acquires airplanes, so it will have use for the more traditional methods of communicating even after it acquires the newest and most sophisticated methods. But it need not restrict itself to the more traditional methods when new and efficient ones exist. And in the field of human communication, the new nations can draw on two kinds of new and promising developments from the advanced countries, which have the possibility of providing "multipliers". These are, an advanced technology for printing and electronic communication, and a group of "new media" for education.

ADVANCED TECHNOLOGY OF MASS COMMUNICATION: OFFSET PRINTING

21. A quiet revolution brought about by offset printing has been taking place in some of the printing plants of industrialized countries. The idea of offset printing is not new. For more than a century it was used only for specialized tasks because the machines to compose the image, and print it at high speed, had not been invented. In the last two decades, however, composing machines have been developed that are as easy to use as a typewriter, and faster offset presses have become available. A number of small newspapers and small printing plants have gone to offset, and found that, for their particular needs, it is less expensive and demands less skilled


labour. For many suburban and rural newspapers, where the runs are comparatively small and the income modest, offset has made the difference between being able and not being able to publish.

22. The method is thus particularly promising for developing countries. It will print copy prepared by any source from a ball-point pen to a photo-typesetting machine. It prints pictures and advertisements very sharply, requires no engraving, and for this reason offset printers can afford to use many more pictures than they could with letterpress. The most important advantage of offset printing for developing countries, however, is its cost. It permits a small paper or printing establishment to start in business with a few thousand dollars instead of much larger capital.

THE TRANSISTOR

23. The transistor is a tiny electronic element which does the work of a radio or television vacuum tube, and requires much less current and much less space. It has made possible, in the industrialized countries, a great variety of miniaturized electronic devices, and in particular has made pocket radios practicable, and is beginning to be used for portable television receivers.

24. For developing countries the transistor is a particularly important advance because its low requirement in electric current makes battery-operated radio and television receivers feasible, and thus permits broadcasting to reach far beyond existing power lines. Transistorized radios now run for many hours on dry cells. Television receivers suitable for group reception are being designed to run on somewhat larger dry cells, or on wind-driven or charcoal-burning generators. It appears that the problems of supplying power to remote broadcast receivers, and thus jumping the barriers both of illiteracy and of power lines, may be well on the way to being solved.

25. These developments bring within reach the five-dollar radio, which has long been a goal of Unesco. If a rugged and dependable receiving set, powered by long-life batteries, can be built to sell in the neighbourhood of five dollars, then almost any developing country can afford to place these receivers in its villages.

THE COMMUNICATION SATELLITE

26. As this is written, the Telstar satellite is demonstrating its ability to relay television, radio, and telephone messages between continents. Telstar is only the first stage of a development which will bring all the countries of the earth closer together, so far as communication can do that, and in its later stages will offer some challenging opportunities for widespread education.1

27. The present generation of communication satellites is able only to transmit messages from one ground station to another. Probably within ten years, however, satellites will be able to transmit to home television receivers. A satellite in orbit will perhaps be able to transmit an educational television programme to an entire nation. It hardly needs to be pointed out that this development, when it comes, will present problems as well as opportunities. There will be problems of ownership and control, of curriculum and language, of scheduling and programming, and of broadcast frequencies. But if these problems can be solved, then the communication satellite may contribute strikingly to the information, the education, and the bonding together of the people of a nation.2

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1 A less sophisticated experiment in transmitting educational television over great areas has been under way in the United States for two years: an airplane carrying a television transmitter, flying in circles over a city in Indiana, serving schools in parts of five States. The signal, which comes directly from the airplane to school television receivers, is reported to be excellent. There have been the expected troubles with scheduling classes.

2 While mentioning these very sophisticated and costly "media", it should also be mentioned that there are recent developments of interest at the other end of the spectrum of cost and complexity. For example, there is the sunlight filmstrip projector, developed by A.I.D., which can be made very cheaply and will project slides or strip films effectively without the use of electricity, using direct sunlight from a mirror.
THE "NEW MEDIA" OF EDUCATION

28. The "new media" has become a common term in some advanced countries, but it is not an exact phrase, and we shall try to say what we mean when we use it.\(^{(1)}\)

29. Educational media are any devices that carry learning experiences to an audience. We might say that the teacher is the oldest and still the best of the "educational media". But as technology has developed, a series of devices has been produced to represent and aid the teacher in providing experiences from which students can learn efficiently. There were a number of such devices even before print, but the printed textbook was the first educational medium that permitted the teacher to multiply his efforts and provide learning experiences for many more students than he could teach personally. Several hundred years after the textbook was introduced, technology gave teachers the ability to extend educational experiences by projecting films, slides, and other teaching materials. Mockups and models became available. Educational radio and television made it possible to circulate lectures and classroom demonstrations very widely. And in the last few years, programmed instruction has made it possible to bring an efficient tutor experience to a very large number of students.

30. Thus, the "new" educational media are different at different times and at different places. The textbook was the "new" educational medium 300 years ago. Films and projected materials were new 50 years ago; educational radio, 35 years ago; educational television, 10 years ago; and now programmed instruction is new. This is the timetable for the most advanced countries. In many developing countries, educational radio is still new, and educational television and programmed instruction are yet to be discovered. When educators speak of the "new educational media" at the present time, they usually refer to educational television and programmed instruction, supported by the slightly older media of radio, films and projected materials, and print.

31. In one sense, however, the use of the term "media" is not the same for programmed instruction as for the other devices we have called educational media. Television, films, radio, and print are simply channels to carry any kind and method of teaching or information. Programmed instruction, on the other hand, is itself a method of teaching, and must be carried by one of the other channels—by print in the form of programmed books, by films in teaching machines, or by the use of programmed methods in television. For the most part programmed instruction today takes the form of a special kind of workbook which has the ability to multiply the teaching of the tutor and offer a highly efficient learning experience; and in this respect it is a true educational medium.

32. The educational media, extensively used and tested in the more advanced countries, are particularly important to developing countries because they hold out the opportunity of multiplying teachers and classrooms, speeding up education, spreading information more widely, and thereby increasing the pace of national development. Indeed, these media may be the only way that the traditionally slow rhythm of educational growth may be sufficiently hurried and the benefits of knowledge and skill shared with millions of people in this generation who otherwise would never have an opportunity to be educated, or to participate as informed citizens in the development of their nations.

QUESTIONS OF EFFECTIVENESS

33. How effective are these media? It is hardly necessary to cite evidence that the textbook is an effective device (see the proceedings of Unesco's Geneva Conference on Improving the Textbook (1961)). Likewise, films have proved for a long time that their pictorial qualities and their ability to combine sight and sound are powerful stimulants to learning. In general, experiments show that students learn at least as much from television as from sound films, and as much from either as from an average teacher teaching the same subject for the same amount of time in the classroom. Four hundred carefully controlled experiments comparing educational television with conventional classroom were recently summarized. In 65% of the comparisons there was no significant difference between what was learned from television and from the conventional

\(^{(1)}\) This discussion of the new media draws on two memoranda prepared by Dr. Schramm for Unesco: one to the Conference of Experts on Educational Media (Paris, March 1962), and a second one prepared by request for the Director-General, July 1962.

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method; in 14%, the conventional method came out on top; and in 21%, the television class
learned more than the conventional one.\(^1\)

34. This is not the same as saying that television or sound films are adequate substitutes for a
teacher. They are not. The research in advanced countries shows, rather, that television and
films plus a teacher, make a uniquely powerful combination. If a qualified teacher is not avail-
able, then a discussion leader with opportunity to discuss what has been seen, and practice what
has been taught, will add considerably to the effectiveness of television or films alone. And if
neither a teacher nor a leader is available, then there will still be considerable learning from
television or films alone. In the United States, for example, persons who are home-bound and
unable to go to school have been taught with great success by television, supplemented with read-
ings and practice exercises.

35. But the great promise of the audio-visual media for the developing countries is that, in
situations where not all teachers are well trained, they can share the most expert teaching; in
situations where a teacher is not qualified to teach a given subject, that course may still be made
available by television or films; and in countries where many teachers need further training,
making expert teaching available on the media is a kind of in-service training which will enable
teachers to improve their own work. The importance of television teaching as in-service training
for less well-qualified teachers has been demonstrated impressively in advanced countries, and
would seem to be a particularly important consideration for developing countries where the need
is so great for upgrading the level of teaching. Thus the effect of the new media on education will
not be to replace the teacher, but rather to give him a chance to teach better, by permitting him
to observe expert teaching and to delegate certain important tasks - demonstrations, and teaching
of specialized topics - to television and films, as he now delegates certain important teaching
tasks to textbooks.

36. This is particularly important in developing countries because of their need to maintain
flexibility in curriculum. In many of these countries drastic changes are being made to meet
needs and cover subjects not presently represented in the curriculum. Neither qualified teachers
nor materials are likely to be available in sufficient numbers and quantities to meet the require-
ments of these changes. Therefore, new media like television, radio, and film can be especially
useful in supplementing and guiding teachers, and making materials quickly available.

37. Television has certain advantages and certain disadvantages as compared with radio and
films. Unlike radio, it can bring the visual element to teaching; but radio has greater range
than television, and is cheaper to install and operate especially where electrical power is not yet
readily available. For many years to come, radio will doubtless continue to be highly important
in the communication plans of developing countries. Compared to films, television has the ad-
vantages of liveness and portability; but films can be controlled locally, scheduled and repeated
as needed. Films are and will continue to be an important part of educational television.\(^2\) And
there are situations in which less sophisticated media are clearly preferable. For example,
when it is desired that a class should look long and carefully at a picture, a slide is obviously
more economical than television or moving pictures. There is a place for all the educational
media, and the more advanced countries have learned to use them as a system, choosing whatever
combination of teacher and media seems most suitable for a given learning experience.

38. But of the new media, it is television that is presently most intriguing as a multiplier for
teaching and informational resources. It may seem incongruous to think of using a sophisticated
and expensive medium like television to carry some of the burden of teaching in underdeveloped
countries. But television does not seem sophisticated to the person viewing a programme, and its
cost is a relative matter. Television has been used effectively to teach almost all subjects that
can be taught by classroom lecture and demonstration. When accurate accounts of its cost as a
teaching device were kept in the United States, it was found that it was cheaper to teach large

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\(^1\) Schramm, W. What we know about learning from instructional television. In Educational
Television: The Next Ten Years. Institute for Communication Research, Stanford, Cali-
ifornia (1962). pp. 52-75. See also Cassirer, H. Television Teaching Today. UNESCO,
Paris (1960) for a review of television's use for teaching in seven advanced countries.

\(^2\) For a review of research on the effectiveness of these media, see Allen, W.H. Audio-
visual communication research. In Encyclopaedia of Educational Research (1960).

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numbers by television than in classrooms. If the costs of suitable receivers can be brought down, as seems likely; if rugged transistorized models can be built, as now seems almost certain; if efficient ways can be found to replace the batteries or provide other current-producing devices - then television may very well turn out to be the cheapest way of providing first rate education in many developing countries, and perhaps the only way in which good teaching can be brought in this generation to large numbers of people in some of these countries.

39. Programmed instruction, being so new, may require a few words of explanation. It is essentially a tutorial method put into such form that a student "teaches himself". As we know, learning is an active process. One learns by responding. A "programme", in programmed instruction, is essentially a series of stimuli to which a student responds. More specifically it is a series of questions which the student answers, or a series of statements with blanks for him to fill. But these have certain special characteristics.

(1) They begin with knowledge a student has, and lead him by short steps and logical pathways through the knowledge he is supposed to master.

(2) Because the steps between items are short, he makes few mistakes and therefore practices almost entirely correct responses.

(3) As soon as he has responded he is able to find out whether his response is correct. Thus, if he makes mostly correct responses, it is correct responses that are reinforced by this immediate knowledge of results.

(4) Review is built into the sequence.

(5) Using this method, the student can move at his own best pace. The quick learner will not be bored; the slow learner will not be left behind the class.

40. This is a brief and inadequate picture of a rather sophisticated technique of teaching, but let us point out two further advantages of this method. In the first place, before a programme can be made, the desired outcome in knowledge must be defined very clearly; this often has an extremely salutory effect on curriculum and teaching generally. In the second place, when programmes are being made they are tried out on individuals of the level for which they are intended. They are revised repeatedly until they are relatively flawless, and then they are tried on a large group. Thus, unlike most teaching instruments, programmed instruction can practically be guaranteed to "work" when it is released for use.(1)

41. Programmed instruction is so new that no such body of evaluative research exists on it as on television. Yet the record of successful use is a remarkable one, considering that the first experimental programmes became available only five years ago. It has been used successfully by children of every level and by adults, by slow learners and superior students; in school, in industry, and in the home; to teach behaviours as different as rote learning, paired associate learning, concept formation, the application of formulas, constructing logical proofs, learning to read a foreign language, "trouble shooting" in radio hookups, instrument flying, reading a radar screen, and operating an electronic digital computer. In the relatively few instances where it has been compared directly with conventional instruction, programmed instruction has more often come out ahead than behind. It has proved a useful device for individual study, home work, and remedial work. Furthermore, the method of programmed instruction has increasingly been used in teaching groups, face to face or by television and in textbooks, and programming methods promise to increase the effectiveness of those media.

42. Of course, programmed instruction has had less testing than the other media, and at this time only 200 to 300 programmes are available, as compared to many thousands of textbooks, films, and other audio-visual materials. In particular, programmed instruction has never yet been tested in a developing country, and it is now known how much adaptation of existing materials would be required for developing cultures, or what differences in form or use might be required of programmes made especially for developing cultures. The first trials in developing countries should therefore be watched very carefully.

43. But, noting this caveat, it seems reasonable to lay aside at this moment the question of whether students learn from the new media. So far as experiment and field tests in the advanced countries answer the question, they do learn. They learn a great deal. The useful questions are: What are the conditions of effective use in developing cultures? When does it make sense to use them as multipliers? For what kinds of uses, what kinds of topics, what kinds of students are they most effective? For what kinds of teaching, under what kinds of conditions, under what kinds of cost considerations, are they to be preferred to other channels of teaching or to no channels? We are beginning to get answers to such questions and some of them will be suggested in the following section of this paper.

THE COMMUNICATION MEDIA IN DEVELOPING COUNTRIES

44. To what extent can we trust the communication research findings of advanced countries as a guide to using the new communication techniques in developing cultures? It is quite right to be cautious about applying research results across cultures, and yet people are often more alike than their cultures, and learn in about the same ways regardless of latitude and longitude. It is probable that any materials and methods transplanted from an advanced country to a developing one would have to undergo adaptation before they could be used effectively in the new culture; and developing countries should keep this in mind before deciding to purchase teaching materials from elsewhere. On the other hand, if an effective system can be made using television and group meetings in an advanced culture, an effective system using the same ingredients can probably be made for developing countries. Whenever programmes can be tailored to the needs of a developing country, programmed instruction can probably be used as effectively there as in advanced countries. Developing countries now have a number of years of experience on which to base their ideas of what kinds of communication will work, and what will not, in their cultures.

45. In selecting a few examples of how the new communication media have been used in the developing countries, we are going to take for granted the most common of all these uses, namely, to inform the public, to arouse their awareness of national policies and problems, to make participating citizens rather than mere residents, and in particular to enlist them in the programme of economic and social development. (We shall not have space here to discuss the obvious importance of a free flow of news, in relation to these objectives.) No country that has ever modernized has done so without performing this basic communication task, and every developing country is now doing it to the best of its ability, making use of the mass media, face to face contacts, and organization. Let us turn to some other uses of the new media.

LITERACY TEACHING

46. In a statement at the beginning of 1962, the Director-General of Unesco said that in ten years illiteracy could be wiped off the earth, if mankind wishes to do so. The pattern by which this could be accomplished is becoming clearer. It would require, in each country where illiteracy is a problem, a careful and extensive organization of teachers (volunteer or professional) to conduct literacy classes; if these teachers were not experienced in literacy training they would have to be taught the method. It would also require social pressure to make illiterates want to learn to read. It would require extensive help from the mass media both to motivate the prospective learners and to extend expert teaching where it is not readily available. And finally, it would require some special reading material to keep up the interest of the new literate until he is able to read ordinary materials. This is approximately the way that Poland, for example, organized itself to do away with illiteracy. (1)

47. In certain other countries, experiments have placed a larger part of the burden on the mass media. Television has been used, where it is available, even more successfully than radio. Some of the best records of television as a channel for literacy teaching come from the more developed countries. In Italy, for example, as late as 1960 there were still two million illiterates, most of them rural people in the southern part of the country. Illiterate adults in a modernized country are likely to be even more resistant than in a developing country. The appeal of being able to watch television was a great aid in persuading these people to join viewing groups around a central receiver. (2)

(2) See the memorandum of Mme Maria Grazia Puglisi, Director of School Television Course in Italy, to the Unesco Meeting of Experts on Development and Use of New Methods and Techniques in Education (March 1962).

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48. The Italians found it desirable to station a trained teacher at each of these viewing points, to guide the students' drill and supplement the teaching they got from television. In making programmes, they discovered that methods for teaching adults to read and write have to be quite different from those used for children. It is necessary not to offend adult pride by making him feel that he is being sent to "school" or being taught by "playing games". It is important to keep him aware that he is learning something useful but, at the same time, to leaven the experience with a certain amount of humour. Every student who followed this course to its end learned to read and write.

49. Television has also been used successfully to teach elementary reading and writing to adults in several places in the United States. Viewers met in groups, under the leadership of a volunteer teacher. The television lesson was supplemented by reading and drill materials or viewed the programmes in their homes. (1)

50. One important conclusion has been reached by every adult literacy programme. This is that special easy-reading materials are urgently required, lest the student forget his newly won skill. Unesco has issued several monographs on this problem. (2) Easy-reading materials also offer a unique opportunity for a country to disseminate useful information about the State and its development plans, about better agricultural practices, health, sanitation, and other high priority subjects. In different places, this has been accomplished in different ways, but always with the requirement that the materials should present adult ideas in simple writing, that they should not talk down to their readers, and, above all, that they should be interesting and useful.

51. In Puerto Rico, four books and several booklets, four issues of a poster newspaper, and 8 to 10 posters are issued for this purpose each year. In Liberia a multilingual monthly New Day, written with the 1200-word basic vocabulary of the literacy course, is sold for three cents a copy. In Northern Nigeria a group of tabloid news sheets, each 8 pages in size, are issued for new literates. Literacy House, in Lucknow, India, assembles village libraries of books with very simple vocabularies, publishes books suitable for new readers, and issues a fortnightly family magazine. Every copy, the editor reports, is read by about 20 persons.

52. In many countries this has proved to be an especially important function of the local press. Newspapers published once a week or once a fortnight can provide material which, through its intrinsic interest, compels attention and develops the reading habit. These papers can furnish news as well as information designed to help raise living standards, and create an understanding of community objectives and a civic consciousness. Thus they can both educate and inform at the same time as they provide practice in the useful skill of reading.

53. Developing countries can therefore be quite confident that both the electronic and the printed media, if used skillfully in viewing groups with group leaders, can be used to speed and extend the process of literacy training.

THE NEW MEDIA IN THE SCHOOL

54. The printed media, slides, filmstrips, and teaching films have long been used in the schools of developing countries. The use of television, however, is relatively new. If television can be used as effectively to teach in the developing countries as it has been in some of the more advanced countries, then, it will have certain special advantages. For one thing, it will enable a country where highly trained teachers are scarce to share its best teachers very widely. Where few teachers are trained to teach certain subjects, it will make it possible for those subjects to be taught even where no resident teachers are available. Where projectors and films are scarce, television can be a "big projector" for hundreds of schools at the same time. And, television will be a powerful tool of in-service training and improvement for teachers.

55. In Turkey, rather than trying to develop a new television course in physics, Istanbul educators adapted for use of Turkish schoolchildren the 162 half hour lessons of the Harvey White


(2) See two useful publications by Unesco - Publications for New Literates; Seven Case Histories, and Publications for New Literates; Editorial Methods, which are, respectively, numbers 24 and 22 of Reports and Papers in Mass Communication (Paris, 1957).
physics course which has been used successfully on television both in America and in England.\(^{(1)}\)

They also adapted the accompanying textbook, teachers guides, and unit tests. One of the problems of Turkey is the shortage of well-qualified teachers for subjects like physics. Therefore, the experiment is designed so as to compare what lycée students would learn (1) if taught by experienced teachers with the aid of the filmed programmes, (2) if taught by inexperienced teachers with the films, (3) if taught by correspondence but still given a chance to view the films, and all these compared with (4) what the best teachers could accomplish without the films, and (5) what the average teachers could accomplish without the film. It was found that students taught by the best teachers, using what teaching aids they wished but without the television films, scored slightly better than the students who saw films. This may be a comment on the success of the adaptation. But the other results were more significant. There was no significant difference between the test scores of students taught by experienced and by inexperienced teachers, if the films were used. There was no significant difference between the scores of correspondence students (with the films) and the scores of students taught by experienced teachers using the films. But students taught either by inexperienced teachers or by correspondence, using the films, did significantly better than students in another city taught by average teachers without the films. This seems to be very good evidence that television or films can be used in developing countries to bring the benefits of good teaching to schools where experienced teachers are not available, and even to students who must study without a classroom teacher.

56. Educational television has been under trial in the schools of New Delhi, India, with over 30,000 students receiving instruction in Hindi, English and science. The results are encouraging. First reports indicate improved performance by students, increase in enthusiasm for science, and, perhaps most important, an enthusiastic response on the part of both teachers and administrators to the in-service training opportunities involved. Not only do the teachers see expert teaching procedures, but also they have a chance to refresh their knowledge of subject matter. Both teachers and administrators were quoted as saying that the Hindi lessons, in particular, provided as much learning for the teachers as for the students.\(^{(2)}\)

57. Iran used educational television successfully as a six-week summer make-up course for students who had failed the course in physics during the winter term. Of the students who took the summer course, 72% received passing grades when they retook the course examination in the fall.\(^{(3)}\)

58. Western Nigeria has now been broadcasting school television for two years. It has faced many of the problems that are likely to recur in any school television programme newly established in a developing country: the need to train competent producers and technicians, the time required to put good teaching on television, the difficulty of ordering suitable educational films, at long distance, for broadcast, and, especially, the difficulty of keeping school television receivers in repair. Nevertheless, the evaluation of results has been generally favourable, and the production record has been better than anticipated.\(^{(4)}\)

59. It must be concluded that, as a means of sharing good teaching, multiplying opportunities for students to learn, and providing in-service training for teachers, educational television in developing countries is potentially most promising.

INTEGRATING USEFUL INFORMATION WITH ACTION

60. Every developing nation faces the need to supply its people with information on scientific agriculture, health practices, sanitation, and community development, and ensure that the information is acted upon. This task is more difficult because of the high rate of illiteracy and the lack of power lines and communication channels.

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\(^{(2)}\) Personal report by Mr. Douglas Ensinger.


\(^{(4)}\) End of tour report by Mr. George L. Arms, to U.S. AID/Nigeria.

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61. A number of countries have found mobile audio-visual vans useful for this purpose. These are built on trucks and carry their own power generators. They also carry projection screens, projectors, loud speakers, microphones, and other audio-visual tools as needed.

62. The Philippines have been operating 22 such units, using them to show films illustrating better agricultural practices, village government organization, health and sanitation, and so forth. After the film showing, the microphones of the mobile van are frequently used for discussing the topic further. These vans commonly show to audiences of 500 to 3,000 people, and go to a different community each day. Thus, in the course of a year millions of viewers can be reached.

63. Radio has probably been used more often than any other medium for the dissemination of useful information as well as news. Radio has no trouble leaping the literacy barrier, and can reach into remote regions without the help of roads.

64. In Jordan, for example, the broadcasting station in Amman broadcasts an agricultural extension programme every morning at 6.15. The broadcast is made up chiefly of answers to questions. About 300 questions come in each week: "How do I treat the sickness that makes my cow have a call before her time?" or "What do I do about the insects that make the bark of my orchard trees fall off?" The broadcaster, who has himself been an extension agent, selects the most urgent of the questions and, when necessary, takes them to the Ministry of Agriculture and discusses them with specialists. Then, in a conversational manner, he answers the questions for his radio listeners. The number of questions he gets is a testimony to listeners' valuation of the programme. (1)

65. In South Korea, an ingenious use has been made of a limited number of battery-powered radios in an area where both radios and power lines are scarce. Twenty such receiving sets were obtained at a cost of less than $14 each, and a 50-watt transmitter was built at the cost of a few hundred dollars. For a pilot test, an area was selected where the principal health problems were tuberculosis, typhoid fever, and intestinal parasites. Using tape recorders, but also providing for a large proportion of live transmission, a three-hour programme was prepared for broadcast. It featured information on the health problems but also contained entertainment and local features such as a singing contest, music by local bands, and "man on the street" interviews. The programme was broadcast three times a day - 6 to 9 a.m., 11 a.m. to 2 p.m. and 7 to 10 p.m. After each broadcast, volunteers from the girls' high school moved the sets to another community. Thus, within three days, the broadcast was heard in 180 different locations. (2)

66. Not only was the broadcast a popular success; it also taught the desired information. Records were obtained from a sample of viewers before and after the three test days. After the three days, less than half as many people believed any longer that tuberculosis was hereditary, almost everyone had learned how encephalitis is transmitted, and 50% more than previously knew the source of typhoid fever.

MOBILIZING RURAL COMMUNITIES

67. The combination of radio or television with group discussion has been found to be especially effective for informing and mobilizing rural people to play their part in national development.

68. The first outstanding model for this pattern was the Farm Radio Forum, which was started in Canada in 1941. It won an established place for itself and in its tenth year Unesco invited its sponsors to evaluate it as an instrument of adult education. This evaluation found that the Forums had been especially successful in establishing a "sense of community" in encouraging co-operation among the farmers, and in developing leadership. (3)

(1) Thompson, S. First-rate farm radio program. The Multiplier, 3, 9, 23 (1959).

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69. Some of the lessons of the Canadian Farm Radio Forum were applied in France(1) and later in Japan(2), in organizing tele-clubs - viewing and discussion groups organized around television programmes. The French tele-clubs were carefully evaluated, and were found to carry information to their members and to encourage desirable attitude change. They appeared to be more effective when the broadcast topics were selected and the programmes planned in close co-operation with prospective viewers.

70. In Japan, the great appeal of television drew large numbers into the viewing groups, and these groups developed into social centres of the rural communities. "Though it was cold mid-winter", said the evaluation report, "the villagers, old and young, heads of households, wives and children, came to the community hall every Thursday evening ... (They) began to take an interest in more serious subjects rather than in gossip and idle chatter. Television helped the farmers to open their mouths, to express their thoughts and to learn that it is not, after all, such a difficult thing to talk in the presence of other people. Moreover, after expressing their thoughts, they had a sense of satisfaction". One of the measures of the success of the Japanese tele-clubs is that, when the experimental subsidy from Unesco came to an end, the Japanese government decided to continue the clubs under its own support.

71. The greatest success of the broadcast and discussion pattern was gained in India(3). India used radio to provide the broadcast, and organized Farm Forums somewhat on the Canadian model. So popular and successful were these forums that a pilot project in 150 villages soon spread to 3,000 Radio Forums throughout the country, and now Radio Forums, under the terms of the five-year plan, are to be added at the rate of 5,000 per year.

72. As an agent for transmission of ideas, the Forums proved to be "a success beyond expectation. Increase in knowledge in the forum villages .... was spectacular, whereas in the non-forum villages it was negligible". Beyond that, however, the forums became a nucleus for democratic action on the local level. Says the official report "Forums developed rapidly into decision-making bodies capable of speeding up common pursuits of the village faster than the elected panchayat. Frequently they took on functions half way between those of a panchayat and a town meeting .... The forums thus became an important instrument of village democracy, and enabled many more people to partake in the decision-making process in the village .... The demand that (forums) be made a permanent feature was practically unanimous".

73. Thus, the experience of developing countries again confirms the principle, first stated on the basis of research in the more advanced countries, that mass media and related face to face discussion make a uniquely powerful combination.

FINALLY

74. In the first part of this paper, (paragraphs 3 - 17) we outlined some of the tasks which communication must perform in national development. In the second (18 - 42) and third (43 - 72) parts we have been talking about what contributions the mass media, and especially the newer media, might make to simplifying and speeding these gigantic communication tasks. On the whole, the conclusions should be highly encouraging to the developing nations, for the research in advanced countries testifies to the potency of these media, and trials in developing countries confirm these research results, and indicates that the media may be used effectively for multiplying communication resources, sharing good teaching and upgrading untrained teachers, extending information to remote places, aiding in the teaching of literacy, and mobilizing all citizens, but especially the rural people, for the great effort of national development.

75. For reasons unique to their situations, some developing countries may find it desirable now to make much use, others to make little use, of the media for purposes like these. And in many countries it will not be easy to assemble the necessary resources, human and monetary, to use


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the new media and to make the necessary adaptations. But the challenge and the opportunity are
there. And it seems a singularly fortuitous coincidence that just at the moment when efficient
and widespread communication is so much needed in the developing countries, a series of signif-
icant events in communication research and development should bring forth these potent new tools
and methods, to help the new countries in what Julius Nyerere called the "terrible ascent" to
modernity.\(^{(1)}\)

76. It is now generally accepted that this "terrible ascent" requires careful planning and pre-
paration. The import of this paper is that the communication elements should be present in the
development plan from the beginning, and that trained communication skills and communication
budgets should be provided even though these seem to contribute only indirectly to the growth of
industry or the formation of capital. For the overwhelming evidence is that such an investment
in human resources will immensely increase the value of all other developmental investments and
greatly speed the nation along its desired path of development.


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