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Contract No. AID/csd-2829

Academy for Educational Development
1424 Sixteenth Street, N.W.
Washington, D.C. 20036

INTRODUCTION

This reference report has been prepared for those attending a series of presentations by the Academy for Educational Development to the Agency for International Development on the findings from the Academy's studies for the Agency under Contract No. AID/csd-2829, titled "Analytical Services in Relating Communications Technology to Development." The reference report is intended to provide 1) a summary of the contract activities and the reports prepared under the contract and 2) a guide to additional sources of information about the potential use of educational technology for development purposes.

CONTENTS

Additional information may be obtained from the Academy for Educational Development, 1424 Sixteenth Street, N.W., Washington, D.C. 20036, and from Dr. Clifford Block, Educational Technology Coordinator, AID/TAB, Office of Education and Human Resources, Room 2487, 632-9753.

ACADEMY FOR EDUCATIONAL DEVELOPMENT

ANALYTICAL SERVICES IN RELATING COMMUNICATIONS TECHNOLOGY TO DEVELOPMENT

Contract No. AID/csd-2829

The Contract Activities

During the period 1970 to 1973, AID's Office of Education and Human Resources contracted with the Academy to undertake studies in four areas:

1. Identification of research and development in educational technology

2. Analysis of the effectiveness of alternative communications systems

3. Investigating the potential application of educational satellites for development purposes

4. Identification of strategies for the use of communications media for development in basic education, family planning, nutrition and agriculture.

The Academy produced the following nine reports under the contract which are summarized in the following pages:

1) Research and Development Priorities in Instructional Technologies for the Less Developed Countries

2) Research and Development Priorities in Instructional Technologies for the Less Developed Countries: A Summary

3) Alternative Communications Systems for Education in the Less Developed Countries

4) Broadcast Satellites for Educational Development: Possible Key Policy Decision Points, 1973-1978

5) Broadcast Satellites for Educational Development: The Experiments in Brazil, Canada, India, and the United States

6) Strategies for the Use of Mass Communications Media in the Technologically Developing Nations: Basic Education, Family Planning and Nutrition

7) Communications Strategies for Agricultural Development

8) Communications Strategies for Development: A Summary

9) Technical-Economic Considerations in Public Service Broadcast Communications for Developing Countries

ACADEMY FOR EDUCATIONAL DEVELOPMENT

Annotated List of the Nine Reports Produced Under
Contract No. AID/csd-2829

Report No. 1 Research and Development Priorities in Instructional Technologies for the Less Developed Countries

A. Statement of the Problem.

The potential use of instructional technology for solving major educational problems has become apparent in recent years. Initially the interest focused on education in the more developed countries. Recently the less developed countries are included. Their obvious needs, incapable of being met by traditional means, make them more likely than some wealthier nations with less demanding problems to use the instructional technologies. UNESCO, the World Bank, the Agency for International Development, and the Ford Foundation are among the many organizations investing money and effort in research and development in communications technologies.

The appeal of instructional technologies in the developing countries is understandable. The vast scale of their educational problems requires imaginative solutions. The urgency makes gradual, incremental changes unacceptable. Instructional technologies promise approaches that can cope with the scale and urgency of the problems. The studies here proposed may achieve useful results within five to ten years.

The Foreign Assistance Act of 1970 provides funds for research and development in instructional technologies in less developed nations. Under Section 220 the President of the United States is authorized to "carry out programs of peaceful communication." This emphasizes the importance of assisting less developed countries to make use of communications technologies for educational, health, agricultural, and community development purposes. The Agency for International Development is encouraged to participate in these efforts.

The goal of this study is to provide a basis for productively directing scientific and development research on the use of the instructional technologies as applied to educational problems of the developing countries. The contract directed us to produce a guidebook that would first provide a "research map" which indicates those areas involved in the application of technology to education in which research is most needed, and is most likely to produce significant breakthroughs; and second, to define 25 to 30 specific research and development projects that can be undertaken with support from AID or other research funding organizations.

In developing the "research map" we were asked to consider all the elements of educational systems relevant to the effective use of

instructional technologies. The aspects considered include the various instructional technologies, classroom teacher behavior, student learning characteristics, and educational management systems as well as integration and interaction with traditional tools, such as curricula, teaching materials, and textbooks.

Also in accord with the contract we have sought to define research and development priorities in the following areas: (1) educational "software"; for example, program content and techniques, utilization, feedback, application to appropriate objectives, individualization, combinations with other educational techniques, etc.; (2) crucial "hardware" problems directly applicable to the use of educational technologies in underdeveloped areas, such as the reliability of receivers and power sources, the costs thereof, and ease of repair; and (3) systems planning and management. In dealing with these areas, researchable problems on the interface of software, hardware, and management systems are also addressed.

The contract also specifies that the proposed projects deal with both formal and nonformal education. This report disputes the fallacy that most learning goes on in schools, colleges, and universities. Quite the contrary, most of it goes on in nonformal situations, outside the official institutions of learning. It has always been so everywhere.

The findings of the proposed projects are not expected to be country-specific. The perspective is that an international agency assumes that the educational problems of less developed countries are sufficiently general to examine solutions on a cross-country basis. Before the conclusions of any project can be applied to a given country, they must be reviewed in the light of existing conditions. For each project a few countries are suggested where AID might appropriately conduct it.

Given the maximum five- to ten-year span desired for the proposed projects to make their impact, most basic educational research is essentially ruled out of consideration. Much basic research applicable to less developed nations has been done. Most of the results await application. If some specific basic studies relevant to particular cultures or countries need to be carried out as part of a project, that can, of course, be done. Such research may delay application beyond the time limits.

This study therefore (a) presents a systematic conceptual approach by which to analyze the present state and future potentials of instructional technology; (b) identifies priority areas for research on and development of instructional technologies in less developed countries; and (c) formulates 26 high priority research or development projects which should be undertaken in the next several years.

B. Description of Procedure of the Study.

After a survey of various alternative conceptual approaches, the approach was selected that appeared most promising and relevant. This was the general systems framework which was used throughout the document. The main aspects of this approach were described. An analysis was then made of the various sorts of living systems involved in the educational process. After that the chief problems in the use of instructional technologies in educational systems were reviewed.

At the end of this process it was possible to make a research and development map employing the systems concepts discussed.

C. Statement of Findings.

It was found that 26 important research and development projects could be identified, 13 of top priority, 8 of second priority, and 5 of third priority. The report then outlines in detail research and development projects.

D. List of AED Personnel and Outside Experts Involved in the Study.

James G. Miller, Academy for Educational Development, Study Director; Edware H. Heneveld, Wendy Peter Abt, and Joyce Studen, Abt Associates; Gustave Rath, The Technological Institute, Northwestern University; Frank Banghart, Florida State University; Robert Branson, Florida State University; Rudy Bretz, Rand Corporation; Fred Burke, Commissioner for Education, State of Rhode Island; Robert Butman, Massachusetts Institute of Technology and Lincoln Laboratories; Karl Deutsch, Massachusetts Institute of Technology; Ithiel de Sola Pool, Massachusetts Institute of Technology; Phillip Foster, University of Chicago; Dean Jamison, Stanford University; Wilhelm Kluver, Experiments in Arts and Technology; Joseph Margolin, George Washington University; Julie Martin, Experiments in Arts and Technology; John Mayo, Stanford University; Emil McAnany, Stanford University; Seymour Papert, Massachusetts Institute of Technology; Emanuel Zymelman, Center for Education and Development, Harvard University; and Clark Abt, Richard Foster, Stephen Fitzsimmons, Christopher Hamilton, Peter Miller, and Richard Anderson of Abt Associates.

Report No. 2 Research and Development Priorities in Instructional Technologies for the Less Developed Countries: A Summary

This report summarizes the work and findings of Dr. Miller's Report No. 1 and includes additional project ideas developed in a June, 1973 conference of international education and educational technology experts.

Report No. 3 Alternative Communications Systems for Education In The Less Developed Countries

A. Statement of the Problem

The purpose of this document is to appraise the implications of alternative communication systems in terms of comparative educational effectiveness, social development utility, costs, and applications in less developed countries.

The immediate purpose is to permit decisions on such systems to be made in such a way as to modernize social development results. The broader purpose of the document is to lay the groundwork for a new subdiscipline dealing with social planning of communications development. By taking the first steps in codifying, organizing, and advancing this body of skills and techniques, it is hoped that this work can contribute measurably to the rationalization of future decision-making in this field.

Included is what is intended to be a comprehensive and definitive inventory of communications media configurations potentially available to less developed countries. This inventory defines the distinctive potentialities and limitations of each of the media and their numerous configurations, comparing such factors as outreach, unit cost, amount of information conveyed, and effect on educational organization. Also it assesses the effects of a centrally controlled communication system as it interacts with subordinate political units which have responsibility for formal education, such as the states of India. The document, in addition, inventories characteristics and effects of communications media and so provides information that is basic to national decision-making about communications development in less developed countries.

B. Description of Procedure of the Study.

A conceptual analysis was made of various alternative strategies for the use of instructional technologies in any particular less developed country. First of all, the basic concepts of systems theory as applied to living systems at all levels were stated, with particular emphasis on the organism level of pupils, students, and teachers; the group level of classrooms; the organization level of schools, colleges, universities, and school systems; and the supranational level of an international educational system. Then the living systems of each of these levels involved in the educational process were identified. Then a list of the presently available instructional technologies which can be used in less developed countries was made, and a characterization was given of each one of them. Then an analysis of the various techniques used in calculating the inputs or resources required to meet the costs of educational systems was presented. Also the variables and measures which can be used in the costing process were described. After that what is currently known about the measurement of outputs

from educational systems, the evaluation process, was outlined and it was suggested how this field can be improved to make it more quantitative, comparable to the costing process, employing variables and indices to measure effectiveness so that the overall cost-effectiveness of the system can be determined.

C. Summary of Conclusions

The document proposes a strategy for selection among alternative strategies for the use of instructional technologies in a less developed country. In this procedure, first a planning process is undertaken which develops a description of all the components of the society which will be involved in the system for social development purposes, including education. Then a manpower analysis is made to determine the needs for trained personnel in the total population. After that alternative systems are suggested which involve either human beings exclusively, instructional technology, or a mix of the two. Only those are suggested which, after an analysis of the potential costs involved, appear capable of being supported by funds from the less developed country or from other sources which are available to it. A procedure is then set up for evaluating the comparative cost-effectiveness of the alternative systems, including perhaps computer-simulation. Recommendation of alternatives in a priority order are made, on the basis of these technical studies, to the national decision makers who determine what the final national policy shall be, taking into consideration not only the technical aspects of the problem but also social, economic, political, cultural, and other aspects.

D. List of AED Personnel and Outside Experts Involved in the Study.

AED Personnel: James G. Miller, Vice President and Director of the Division of Instructional Technology

Outside Experts: Frank W. Banghart, Florida State University;
Bernard W. Cherin, American University;
T. Jack Heckelman, Washington, D.C.;
Dean Jamison, Stanford University;
W. Carl Mitchell, Stanford University;
Michael G. Sovereign, General Learning Corp.;
Colin Warren, Massachusetts Institute of Technology;
and Frank Westervelt, Wayne State University.

Report No. 4 Broadcast Satellites for Educational Development: Possible Key Policy Decision Points: 1973-1978

This report identifies the critical developments and the events that may effect decisions by AID and other development agencies on the use of satellite communications technology for formal and non-formal educational purposes.

The report discusses the important issues and key decision points for the U.S. and international organizations over the next five years which will have a significant impact on the use of satellites and other communications technologies by the developing countries. As stated in the contract "The purpose of this report (is) to provide AID with lead time awareness of the developing environment in which its program will be operating over the next five to ten years. This awareness will enable AID policy makers to (1) contribute in the most effective and constructive way to the formulation of those decisions, and (2) after the decisions have been made, to develop its program congruent with them through cognizance of the constraints and options available."

The reports give particular attention to such issues created by satellite communications as:

1. Free flow of information and copyright.

2. Spillover of broadcasts between nations or regions.

3. Development of an international code of regulations.

4. Operation and management of satellite communication.

5. Allocation of frequency and orbital location.

These and other issues are treated with reference to actions now pending or taken by the international community (particularly the U.N.) to resolve the problems. Current U.S. policy on instructional communications via satellite is given special attention. Also for additional background information a chapter discusses the current state of the art for hardware and Indian and Brazilian satellite experiments now being planned and considered.

In considering these critical issues the Academy has involved experts from the many relevant fields including policy studies, international law, engineers and technological forecasters, cost analyzers, planning officials of developing countries and political scientists. In the course of the study the Academy has also involved as much as possible representatives from other operating agencies including NASA, FCC, Office of Telecommunications Policy (OTP), World Bank, National Association of Educational Broadcasters, U.N. Development Program, UNESCO, Joint Council on Educational Communications, the U.N., and the International Telecommunications Union (ITU). These are in addition, of course, to involvement of representatives from AID and the U.S. Department of State.

Report No. 5 Broadcast Satellites for Educational Development: The Experiments in Brazil, India and the United States

This report provides extensive information on the three existing or planned educational satellite experiments. The study is intended to acquaint educators in development assistance agencies and educational planners in the developing countries with the basic information involved in planning and usage of satellites for delivery of education and information as so far developed in these experiments. Attention is given in the case studies to:

1) Background and purpose of the experiment
2) General nature of the experiments
3) Management objectives
4) Software preparation
5) Evaluation methodologies
6) Costs
7) Problem areas.

Report No. 6 Strategies for the Use of Mass Communications Media in the Technologically Developing Nations: Basic Education, Family Planning and Nutrition

The goals of work summarized in this report have been to improve the quality of life in the technologically developing nations (TDN) and to improve the working relationships between the U.S. and public and private agencies in the TDN's.

The objectives involve the application of the communications media to the improvement of the quality of life in the TDN's for rural and urban poor populations.

More specifically, they include the development of new and effective strategies or plans for the use of communications media and in a manner that will produce a maximum effect with minimal disruptions of existing culture and institutions.

This may be achieved by 1) the development of strategies for the better application of the full range of technologies from satellites to small technologies (e.g., tape recorders, film loops), to these objectives. 2) This will be done via programs to improve a) family planning, b) nutrition, c) education in basic skills. 3) The development of program models that are successful as a result of the effective application of the media. The latter is essentially a synergistic use of modern technology with sound program development to achieve the goals of the TDN's and AID. 4) The development of strategies for the refinement of a behavioral, educational technology that has operated largely as an art form in the past. 5) The development of strategies for the communication of these methods to those who will have ultimate responsibility for their implementation.

The strategies which have been developed are more thoroughly described below. However, it should be noted that they are more than individual ideas (tactics) for the promotion of a beneficial program. Instead, they are comprehensive, frequently long-term strategies rooted in, and consistent with, the needs and characteristics of the user nation and the user citizen, as well as within the appropriate agency of AID to suggest or assist them. They are intended to provide a basis for growth and adaptation so that even as specific programs change to meet changing conditions, the strategies will survive. In this way the host country and the assisting one will be spared the economic and psychological loss of rapid obsolescence.

In view of the uncertainties of national and international affairs as well as the normal process of change and development, it is not possible to assume that conditions in the TDN's when the strategies may be implemented will be as they are today or as they may be projected with today's knowledge. Thus, a pattern of alternative and modifiable strategies and substrategies will be offered.

The strategies include:

1) Those alternatives available to AID and the United States of America.

2) Those alternatives available to the developing nations.

3) Those alternatives that can be implemented at the local level.

4) In addition, methods for the development of new strategies will be recommended.

5) New methods for evaluation and feedback.

6) "Tool chapters" are offered containing elements of the "technology of strategy development" that may be useful to both TDN and U.S. program developers.

7) A review of policy problems and critical decision points to be anticipated in the implementation of these strategies.

A source compilation and other supporting documents have also been included.

This report has been prepared by the George Washington University Program of Policy Studies in Science and Technology under the direction of Dr. Joseph Margolin.

Report No. 7 Communication Strategies for Agricultural Development
by Everett M. Rogers, University of Michigan

The purpose of this report is to synthesize communication strategies for agricultural development. The objective of agricultural development is to improve the levels of living of villagers in less developed countries. So the target audience, whose welfare is being improved and whose behavior is being changed, consists of rural people in Latin America, Africa, and Asia. They constitute the most numerous single occupational category in the world, making up a majority of humanity today. The contents of agricultural development programs mostly center on agricultural innovations like fertilizers, new seeds, insecticides, etc., but attention is usually also given to improving nutrition, health, family planning, and community development. Some agricultural development programs deal mainly with providing credit, electrification, improved marketing, agricultural research, or irrigation, and the present report may have something to say to these programs, but its main thrust is for the diffusion and adoption of technological agricultural innovations, which certainly lie at the heart of agricultural development.

The main audience for the present report are the administrators of change agencies in developing countries. We assume these individuals have an appropriate level of scientific understanding to comprehend the present writing, and the personal experience for it to be meaningful. In addition to this primary audience, much of the present content (about communication strategies) may apply to health, family planning, nutrition, and other development agencies, and hence may be of interest to officials in these fields.

Sources of Material

The main sources of material that are synthesized in the present report are:

1. Previous research on the diffusion of agricultural innovations among villagers in less developed countries. There are about 300 publications dealing with this topic in the Diffusion Documents Center at Michigan State University, and their contents were reviewed in preparing the present report. Foremost among these numerous diffusion studies in its scope, and hence most directly useful to the present analysis, is the three-nation Diffusion Project conducted for the U.S. Agency for International Development by the Department of Communication at Michigan State University, under the author's direction from 1964 to 1969 (Rogers and others, 1970). This particular research provides the soundest data-base for the present report, as the investigation was based upon interviews

with about 10,000 peasant farmers, village leaders, and agricultural change agents in approximately 300 villages in Brazil, Nigeria, and India.

2. Behavioral science research studies of the process of modernization among relatively traditional people, with special emphasis upon the role of literacy and mass media exposure. We reviewed about 25 to 30 such researches on these topics in the preparation of the present report.

3. Research and theory about human behavioral change. Much of this work, such as that dealing with persuasion and attitude change, television effects on children, human learning, and the diffusion of new ideas, was completed in the United States, but it has potential application, with proper caution, to the formation of communication strategies for development goals in less developed countries. Such application was aided in the present report by the author's recent experience in (1) investigating the communication strategies currently being used in national family planning programs in less developed countries during 1970-72, and in (2) participating in a feasibility study in Guatemala for a rural development and communication project in 1972.

In the past, there has often been a wide gap between what is known about human behavioral change on the basis of social science research, on one hand, and the actual strategies of change as used by development programs, on the other. The intent of this report is to translate some of the considerable body of behavioral science research findings that exist, into a form (that is, communication strategies) that can actually be used by development agencies. And thus we hope to help close the lacunae between this particular type of knowledge and practice.

Report No. 8 Communications Strategies for Development: A Summary

This report summarizes and integrates the work done by Dr. Margolin and Dr. Rogers in Report Numbers 6 and 7.

HARDWARE COST-ANALYSIS

Report No. 9. Technical-Economic Considerations in Public Service Broadcast Communications for Developing Countries. By Robert C. Butmann, George W. Rathjens and Colin J. Warren, 1973.

Technical, cost-effectiveness, policy, administrative, cultural and implementation factors associated with the choice of television and telecommunications distribution systems are discussed in this report. The report highlights an interest in improving the distribution of radio and TV signals as a means of reaching people in remote areas, many of whom are outside the money and social economies of the countries in which they live and are therefore relegated to a substandard, meager existence.

As examples of the use of distribution systems, the report points to the countries of Brazil and India. Each has ventured into the use of terrestrial and satellite television and telecommunication distribution systems to aid the flow of knowledge and information to the many segments of their respective diversified societies both in the formal school setting and outside of it.

Tangible instances in which improved distribution systems aid a country are:

- the early detection and forewarning of pending natural disasters
- family planning and literacy campaigns
- providing of public health information and agricultural advice
- entertainment in rural areas to make rural life more pleasant and help to reduce migration to cities

- the broadcast of weather forecasts and market information to farmers
- the promotion of national unity or cohesiveness
- the upgrading and extending of education.

Three types of systems are discussed as possible distribution systems for broadcast signals:

1. Microwave Relay or Terrestrial System: netting of conventional TV stations by microwave relay (and/or coaxial cable) links;
2. Satellite Rebroadcast System: the use of a satellite in a geosynchronous orbit to relay signals to individual TV stations which then rebroadcast them for local reception on conventional TV sets;
3. Direct Satellite System: the direct transmission of signals from a satellite to individual TV sets which are modified to receive such signals.

The authors of the report indicate that there may be reasons other than mere cost-effectiveness criteria for favoring one system of distribution over another. Among the non-technical factors cited are national pride; the hope of technological spill-over which can influence or promote innovation in other sectors of the society; and the possibility of technology taking responsibilities for certain key services out of the hands of entrenched bureaucracies. To these criteria must be added the reality that international aid often is available for one kind of program but not for another that may be equally or more cost-effective.

In reality, the question of cost differences between terrestrial and satellite systems is a difficult one to answer because the performance of each system and its respective deployment techniques fundamentally are different. The choice of the system, therefore, is dependent largely on the type of service wanted, problems which are to be solved, and on policy decision made by governments.

Citing the case of the proposed Brazilian and Indian projects,

the authors advance the merits of a mixed system in which one part of a country may be served by one distribution mode, while the remainder is served by another. For instance, direct satellite transmission may be used to provide service to sparsely populated areas, while a re-broadcast system with transmitters linked by satellite is used to distribute signals to the more densely populated areas.

The report cites particular dollar and cents costs or formulas for calculating capital outlays and operational expenses for any one of the three systems. The report strongly indicates, however, that cost-effectiveness comparison of the three alternative distribution systems is reduced to the practical considerations of a project's objectives, the likelihood of their being realized, geographic distance to be covered, size, make-up and location of audience to be reached, kinds of materials to be transmitted, and the assumptions underlying the use of broadcast media and reasons for wanting to distribute their signals.

In the instance of delayed broadcasts where materials to be transmitted are videotaped for airing at more convenient times, a circulating library alternative is offered, either by itself or possibly in combination with one of the three distribution systems. This alternative becomes particularly attractive if there is great variability in different parts of a country in the schedules of schools to be reached, or public meetings at which TV programs are presented.

The possibility of a single central library providing on-demand transmission to individual TV transmitters also is discussed.

In the case of countries like India, where the population density is high and where the population is more or less evenly distributed geographically, there appears to be little case, at least on cost-

effectiveness grounds, for a satellite system where the primary purpose is the distribution of TV signals.

For larger countries like Brazil, China, Canada, Australia and the U.S.S.R., large parts of which are sparsely populated, a satellite-based mixed rebroadcast/direct system may be cost-effective if there is a high premium on reaching the most inaccessible people. With Alaska included, this may also be the case for the U.S.

Finally, for densely populated areas, cost-effectiveness criteria are most favorable to the circulating library tape distribution system. It is less expensive to mail and/or fly tapes to service areas, than to distribute programs via microwave or satellite.

THE AID EDUCATION PROGRAM STRATEGY

(Summary of the Sector Paper)

In September 1973 Dr. John Hannah, then AID Administrator, issued the AID Education Program Strategy Paper. By way of preface, Dr. Hannah says of the paper,

> The Statement indicates significant past achievements in education by LDCs through use of their own resources, and with the help of development assistance agencies. It also identifies some of the major problems remaining to be solved, particularly those in which the Agency has, or can create, the resources necessary to make an important contribution. It recommends redoubled efforts to relate learning, both in and out of schools, to overall development goals.
>
> The objective of helping to provide more useful education for more people at feasible costs is not a new one in AID. The real significance of the Statement is that it defines an approach and a set of priorities for AID through which this objective may be more effectively achieved.

The full statement may be obtained from TAB's Office of Education and Human Resources.

As many of the concepts and strategies of this statement are paralleled in the studies undertaken by the Academy for AID under Contract No. 2829, a summary of the Statement's highlights follows:

A. The limited success with traditional educational approaches in LDC in last decade

B. The need to plan and emphasize education's role in <u>development</u> of all sectors

C. The need to strengthen LDC research and development capability in education

D. The experience of last decade that technologies have great potential for "in" and "out of" school use

E. Three challenges for AID and LDC this decade all having significance for technology

   1. build more non-traditional systems

   2. achieve improvements in traditional systems

3. build linkages between traditional and nontraditional

F. The proposal areas of interdependent program development emphasis in education to include:

1. educational economics and analysis

2. educational technology

3. nonformal education

4. strengthening higher education for national development

5. other key points identified through other sector analysis

G. The educational technology thrust which is to be essentially R & D oriented

1. support pilot prospects

2. provide consultants

3. problem solutions orientation <u>not</u> technology

4. build LDC professional capability

5. use communication technology for development in <u>every sector</u>; education is part of every sector

THE INFORMATION CENTER ON INSTRUCTIONAL TECHNOLOGY provides information and expert assistance about past, present, and future uses of communications' technology for educational purposes, both in school and out-of-school. This service is given without charge to members of the education community and government agencies in developing countries and to interested individuals and agencies throughout the world who are assisting with educational development programs on an international basis. THE INFORMATION CENTER ON INSTRUCTIONAL TECHNOLOGY is a resource facility operated by the Academy for Educational Development for the Bureau of Technical Assistance, United States Agency for International Development.

Consultation:

Individuals in need of assistance can work with staff members of the Center who have special expertise in and first-hand knowledge of media uses for instruction. All have had foreign field experience and have multiple language capabilities. The Center's affiliation with the Academy for Educational Development provides a larger reservoir of consulting expertise as well as access to the Academy's wealth of experience in successful educational planning.

Seminars, Workshops, and Information Searches:

Upon request, the Center assists developing country planners and public or private agency personnel with seminars and workshops on the potentials and specific uses of educational technology to improve the quality of life in programs on basic education, health, maternal/child care, population and agriculture. For key planners in developing countries, the staff is able to conduct personal searches for specific information needs.

Linking Resources:

An extensive file of specialists and organizations with services, products, and on innovative programs applying technology to educational activities has been developed by the Center. This resource file enables the staff to suggest suitable on-site visits and recommend consulting personnel. The Center is part of a developing educational network of worldwide resource services promoting the dissemination and exchange of information on instructional technology. To enhance the timeliness of materials, the Center has access to A.I.D. sponsored research and that of leading universities and organizations involved in international development work.

Information Collection/Library Services:

The Center has a specialized collection of print and nonprint materials that span the spectrum of technology and can serve a multiplicity of educational needs. Outstanding features of the library are a section of country specific materials on education, unpublished research and reports rarely found in other libraries or noted in most bibliographies. New

materials on educational technology are being added constantly to the collection. A partial overview of the collection's organization is:

media -

- audiovisual aids
- films
- television
- radio
- computers
- satellites

functional approaches -

- adult education
- nonformal education
- formal school use
- teacher training
- programmed instruction
- instructional design
- networks
- systems analysis
- costs
- research and evaluation

geographic areas -

- by region: Africa, Asia and Latin America
- by individual countries

nonprint materials and viewing facilities -

- films
- filmstrips
- slides
- audio and video tapes
- simulation and gaming devices
- demonstration kits

A partial list of the reference materials and periodicals available in the information collection is:

indexes -

- Current Index to Journals in Education (CIJE)
- Educational Products Information Exchange Institute (EPIE)
- Educational Resources Information Center (ERIC)
- National Information Center for Educational Media (NICEM)
- Programmed Learning Library

journals -

- Audiovisual Instruction
- British Journal of Educational Technology
- Educational Media International
- Media and Methods
- Telecommunication Journal
- Training in Business and Industry
- AV Communication Review
- Educational Broadcasting International
- Educational Broadcasting Review (NAEN)
- Infosystems
- Sound and Communications
- Television et Education
- UNESCO Courier

newsletters -

- AECT Newsletter
- INNOTECH Newsletter
- Alliance for Progress Weekly Newsletter
- Asian Broadcasting Union Newsletter

- Children's Television Workshop
- NKH - Today and Tomorrow
- SIESC Newsletter
- Asian Mass Communication Bulletin
- GPN Great Plains National Newsletter
- National Instructional Television Center

hardware and software catalogues from U.S. and overseas producers

special reports and case studies -

- the complete series of reports by the Institute for Communication Research of Stanford University on television and education reform in El Salvador

- programme d'education televisuelle, Republique de Cote d'Ivoire, Ministere de l'education nationale

- an Academy for Educational Development series of reports focusing on research and development priorities in instructional technologies, communications strategies, satellites for educational development, technical-economic considerations in public broadcasting for developing countries

The collection has in-depth country materials on:

- educational television - India, American Samoa, Colombia, Mexico, Ethiopia, Niger, El Salvador
- communication satellites - India and Brazil
- rural radio programs and schools - Colombia, India, Zaire
- educational radio - Kenya, Mexico, Tanzania
- video tapes - American Samoa and El Salvador
- educational films - Brazil, Saudi Arabia, Ghana, Australia
- filmstrips - India, Malaysia, New Zealand

Backup to this collection is the research collection of the Commission on Instructional Technology which provided the supporting data for the Commission's two-volume research study "To Improve Learning."

Publications and Products:

The staff does information packages on various themes and topics, often translating them into appropriate languages. The Center's publication policy, designed to meet the needs and interests of its users, is reflected in the following complimentary publications:

Newsletter:

- INSTRUCTIONAL TECHNOLOGY REPORT
  Issued bimonthly

Bulletins:

- SOURCES OF INFORMATION AND ASSISTANCE ON EDUCATIONAL TECHNOLOGY FOR DEVELOPMENT: A DIRECTORY
  Information Bulletin No. 1
- EDUCATIONAL REFORM AND INSTRUCTIONAL TELEVISION IN EL SALVADOR: COSTS, BENEFITS, AND PAYOFFS (A Summary), Richard E. Speagle
  Information Bulletin No. 2

- INSTRUCTIONAL TELEVISION IN THE EDUCATIONAL REFORM OF EL SALVADOR
  Wilbur Schramm et al
  Information Bulletin No. 3
- RADIO'S ROLE IN DEVELOPMENT: FIVE STRATEGIES OF USE
  Emile G. McAnany
  Information Bulletin No. 4

Special Publications:

- EDUCATIONAL TECHNOLOGY AND THE DEVELOPING COUNTRIES, A HANDBOOK
  Academy of Educational Development (English, French, Spanish)
- AN EDUCATOR'S GUIDE TO COMMUNICATION SATELLITE TECHNOLOGY
  Kenneth A. Polcyn

Film:

- "Classroom Television: Instrument for Educational Change"

Use of the Center:

The Center welcomes visitors to its office in Washington, D.C., Monday through Friday, from 9:00 to 5:00 PM. Its professional staff is on hand to answer inquiries, orient visitors to areas of special interest represented in its print and non-print collection, and provides individual consultation and advice on the field of educational technology and international development. Letters and telephone calls requesting information are welcomed.

BASIC ORDERING AGREEMENT FOR PLANNING EDUCATIONAL TECHNOLOGY SYSTEMS IN FORMAL AND NONFORMAL EDUCATION

AID has recently executed a basic ordering agreement with the Academy for Educational Development under which task orders may be issued by any AID bureau in Washington or the field to call upon the Academy's resources to provide technical assistance in the general areas of:

1. increasing access to education;
2. reducing unit costs of learning;
3. increasing learning effectiveness; and
4. interrelating of education and other development sectors, i.e., nutrition, population and health; in-school and out-of-school applications of educational technologies.

This agreement reflects the increasing interest on the part of developing countries in pursuing the potential application of educational technology to meet growing educational needs and AID's intent to provide immediate, effective responses to those countries seeking technical planning assistance in this area.

Such services include, but are not limited to, the following five areas:

A. Developing general plans of work for carrying out detailed planning studies. The general plans of work will address the objectives of the planning studies, and the timing and the anticipated relationship of results of the planning

studies to AID's key problem areas in education.

B. Carrying out detailed planning studies directed to the education and human resources development problems of a specific country or countries which will be sufficiently detailed to permit LDC's to make decisions with regard to feasibility, cost, and probably utility.

C. Carrying out special studies such as the review of sector plans in education and other social development fields, analysis of on-going and proposed projects and advisory services in the areas of program planning, program analysis and evaluation, and educational technology systems development.

D. Providing assistance in bringing together appropriate individuals from universities, and public and private agencies for specific conferences.

E. Providing assistance in recruiting experts for short-term activities. Special emphasis will be on recruiting individuals with LDC experience and language capability. LDC professional expertise will also be considered for recruitment.

F. Providing assistance in developing summary reports, slide presentations, films, etc., which focus on the utilization of study results and/or focus on techniques and methodologies

drawn from such studies.

For more information regarding the basic ordering agreement, contract number AID-ta-BOA-1060 , contact Dr. Clifford H. Block, TA/EHR, 632-9753 or Mr. Stephen Moseley, Director of Administration, Washington, D.C., Academy for Educational Development, 1424 - 16th Street, N.W., Washington, D.C., Phone: 265-5576.

REFERENCES ON EDUCATIONAL TECHNOLOGY

During the past decade an increasing number of reports and statements have been published on the subject of applying educational technology to the education problems of the developing countries. What follows is a selected bibliography for the interested reader taken from four significant reports published during the past year. These include:

A. Big Media, Little Media, Wilbur Schramm, Institute for Communication Research, Stanford University, March 1973; performed under contract No. AID/csd-3284

B. An Educator's Guide to Communication Satellite Technology, Kenneth A. Polcyn, Information Center on Instructional Technology, Academy for Educational Development, Inc., September 1973; prepared under AID/csd-2506

C. Communication Strategies for Agricultural Development, Everett M. Rogers, Academy for Educational Development, Inc., 1972; prepared under AID/csd-2829

D. Research and Development Priorities in Instructional Technologies for the Less Developed Countries, James G. Miller, Academy for Educational Development, Inc., 1973; prepared under AID/csd-2829.

These reports and other materials may be obtained by contacting the Information Center on Instructional Technology, Academy for Educational Development, 1424 Sixteenth Street N.W., Washington, D.C. 20036 (202-265-0808).

A.

REFERENCES ON EDUCATIONAL TECHNOLOGY

Taken from Big Media, Little Media

by Wilbur Schramm

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