

July 27, 1966

Mr. George C. Sponsler
International Business Machines Corporation
326 E. Montgomery Avenue
Rockville, Maryland 20850

Dear George:


We appreciated receiving your letter of July 22 addressed to Mr. O'Connell concerning your recent contact with personnel of the Brazilian Embassy.

Responding to your request, we wish to interpose no objections to the release of your study paper, "Teacher Plus Technology: The Team for International Education." In releasing the paper, however, it would be inappropriate for you to disclose any particular interest that the U. S. Government may have in the paper.

The subject of our discussions concerning educational television opportunities via satellite is continuing to be of interest to our office; however, a definitive program has not as yet been developed. We are pleased that Mr. Albert Horley of Stanford University has recently joined our staff to assist us in this program area. I hope it will be possible for us to meet in the near future and to afford Al the opportunity to meet you and your associates.

With personal regards.

Sincerely,


Fred W. Morris, Jr.
Associate Director

FMorris:dc
DTM

Col. Johnson
Mr. Horley

April 14, 1966

Memorandum for Mr. Charles Johnson:

Incident to our telephone conversation, I thought you might be interested in the enclosed which Mr. O'Connell sent to Mr. Cater some weeks ago. To date, we have had no indication of further interest. Obviously, we are looking forward to an opportunity to assist.



Fred W. Morris, Jr.
Associate Director

Encl.

(Memo of 3/28/66 CONFIDENTIAL

w/IBM Federal Systems Division booklet: "Teacher Plus Technology"

FWMorris:ec

DTM

Morris RF

"

International Education & Info. Exchange

CONFIDENTIAL

THE WHITE HOUSE
WASHINGTON

March 28, 1966

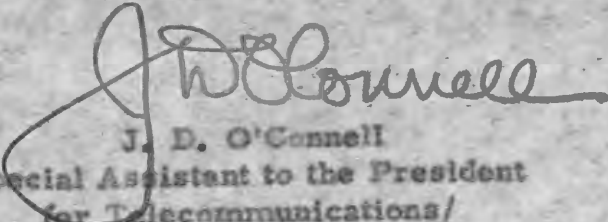
Memorandum for the Honorable Douglass Cater:

The attached Study Paper entitled, "Teacher Plus Technology: The Team for International Education," has been prepared by the IBM Federal Systems Division following my conversations with Dr. George Sponsler of IBM. Section 5 of the Study Paper provides a suggested basis for an IBM proposal to conduct a study of the subject under contract with the Government.

This may be of interest to you -- particularly as it relates to National Security Action Memorandum 342, dated 4 March 1966. I understand you are planning to undertake leadership of a working group addressing the possibilities of using the communications satellite system to advance information exchange and educational purposes particularly in less-developed countries.

I would welcome an opportunity to discuss this subject with you and to offer assistance where telecommunications aspects are involved. I believe some of your questions as to the relationship of communication satellites with educational help to developing nations can now be more clearly answered as a result of the thinking we have done.

FWMorris:dc
DTM-2
Morris RF
Morris Subj.


J. D. O'Connell
Special Assistant to the President
for Telecommunications/
Director of Telecommunications Management

Encl.

Copy furnished:

Hon. Anthony Solomon, Department of State
Hon. David E. Bell, Department of State/AID

W. G. Carter - Dept. of State/AID

CONFIDENTIAL



326 E. Montgomery Avenue, Rockville, Maryland 20850

of the Director
Center for Exploratory Studies
Federal Systems Division

July 22, 1966

The Honorable James D. O'Connell
Special Assistant to the President
for Telecommunications
Executive Office of the President
Washington, D. C. 20504

Dear General O'Connell:

I have recently been in contact with Mr. George Almeida, Minister Counselor and Dr. Paulo de Goes, Scientific Attache, both of the Brazilian Embassy, discussing with them our general ideas on satellite educational TV systems for developing nations. They were both very interested and have asked that I give them information which they, in turn, can pass to their Ministry of Education and National Research Council in Brazil.

In that regard, I wonder if I might have your permission to send them copies of our study paper, "Teacher Plus Technology: The Team for International Education," which we prepared for you in March. I think there is great interest on the part of the Brazilians in such a system and I believe it would be a most propitious place to begin our efforts.

Best regards to yourself and Fred Morris.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "G. C. Sponsler", written in a cursive style.

George C. Sponsler

GCS:pt

cc: Dr. A. H. Moseman



International Business Machines Corporation

326 E. Montgomery Avenue, Rockville, Maryland 20850

of the Director
Center for Exploratory Studies
Federal Systems Division

July 22, 1966

Dr. Paulo de Goes
Scientific Attache, Brazilian Embassy
Brazilian American Cultural Institute
2129 S Street, N. W.
Washington, D. C.

Dear Dr. de Goes:

As I promised during our meeting of last Wednesday, I should like to outline for you our thoughts as to how new space technology may be used to increase the effectiveness of educational systems in the developing nations and thereby assist in the long-term economic growth of those countries.

The United States has a vital interest in helping the developing nations to become economically strong. Perhaps the most important means to this end is through the educational systems in those nations. There is a growing awareness of the need for developing human resources so as to achieve a proper balance with the expected growth in physical resources. Over the next few decades, a major investment will therefore be required in education and training to secure the skills to meet the needs of modernization and, in particular, industrialization.

Various systems for education and training presently exist in all of the developing nations. In deciding to modernize their present systems, officials and educators of the particular nations involved must deal with the basic questions of ends and means:

- o What knowledge and skills should be developed?
- o With what relative priority?
- o How and by whom?
- o At what cost?

The U. S. Government, together with American educators and industry, can assist their counterparts in the developing nations to address these questions and to find solutions appropriate to the needs and aspirations of those countries.

July 22, 1966

Our studies of the problems of development and our knowledge of modern communications and computer technology have convinced us that the newer educational media and technology, and instructional TV in particular, may be used to increase the effectiveness of the teaching resources presently available in the developing nations. We believe it is possible to couple the newly evolving space technology with instructional TV to lower the costs and increase the effectiveness of education over very wide areas.

For example, a system for Brazil might involve the transmission of instructional TV programs from one or more of the principal cities of Brazil to a communications relay satellite, launched by the United States for Brazilian use, in a synchronous equatorial orbit (i.e., 22,300 miles above the earth). The satellite would rebroadcast to a small number (say 20 to 50) of ground stations, each in turn rebroadcasting to some 500 receivers located in the school houses of the many villages around each ground station. The essential features of the system would be as follows:

Program content and format would be controlled by the developing nation being served by the satellite, i.e. Brazil.

Instructional material, e.g. science courses, would be developed by that nation with the assistance, if desired, of other nations.

The initial quality of service would be adequate but austere, with each television receiver being used on a communal basis by children and adults in the village served.

The system would have the capability for evolution toward higher powered satellites and lower cost ground TV receivers, so as to permit it to be extended to cover the entire country at a reasonable cost.

The system would be compatible with existing technical standards and frequency allocations.

I hope that this brief outline will be of use to you. We have more detailed information available but its dissemination would require appropriate approvals from our government, which I am attempting to secure. In the meantime if you have any further questions, please call on me.

Sincerely yours,

Original signed by

George C. Sponsler

GCS:pt

cc: Mr. George Almeida

Dr. A. H. Messemart, Gen. James D. O'Connell

July 22, 1966

Dr. A. H. Moseman, Assistant Administrator
for Technical Cooperation and Research
Agency for International Development
Washington, D. C. 20523

Dear Dr. Moseman:

I phoned you earlier this week to ask your permission to give the Brazilian Embassy certain information which we prepared for you in connection with our Educational Satellite TV proposal. Since you were unable to return my call and I had promised to give Dr. Paulo de Goes, Scientific Attache of the Brazilian Embassy, an answer by today, I have prepared the attached rather general letter. If I could have your permission, I would, however, like to support it subsequently with more detailed information.

Incidentally, for your information, I was referred to Dr. de Goes by my friend Mr. George Almeida, Minister Counselor of the Brazilian Embassy. From him I have learned that Brazil is very interested in our thoughts and I believe, as I remarked in my attached letter to General O'Connell, that Brazil would be the ideal nation in which to test out a satellite educational television system such as we propose.

Should you like more information, I would be pleased to give it to you personally. In the meantime, I hope you will give me your permission to provide the additional information to the Brazilian Embassy.

Sincerely yours,

original signed by

George C. Sponsler

GCS:pt

Attachments

cc: General James D. O'Connell ✓



IBM Federal Systems Division

Study Paper
(Revised)

Teacher Plus Technology:
The Team for International Education

March 1966

This report contains information of a proprietary nature and any use thereof, or reproduction of this document for other than governmental purposes, is subject to the prior approval of International Business Machines Corporation.

Center for Exploratory Studies
Federal Systems Division
International Business Machines Corporation

CONTENTS

1. Summary
2. Context for Decision on Educational Development
 - 2.1 Need for Educational Technology
 - 2.2 Potential of Instructional Television
3. Alternatives in Educational Systems
 - 3.1 Need for Systems Approach
 - 3.2 Choices of Mix of Resources
 - 3.3 Instructional Materials
 - 3.4 Choices of ITV Systems
 - 3.5 The Nature of the TV Satellite
4. Analytic Approach for Evaluation of Alternatives
5. IBM Proposal for Pilot Study

TABLES AND FIGURES

Table 1 Principal System Alternatives

Figure 1 Global System for Generation, Distribution,
and "Consumption" of Education

1. Summary

In fostering economic development abroad, the United States is turning increasingly to instructional television (ITV) to assist in the tasks of education and training. The U.S. action is based on the following rationale:

- o Most nations desire economic development and modernization.
- o Essential to development is a massive investment in human resources through education and training.
- o Such investment is being impeded by teacher shortages which may persist for many years.
- o Educational media and technology, and ITV in particular, may be used to increase the effectiveness of available meager teaching resources in developing nations.

In this paper we outline the case for increasing the application of technology and using ITV as an aid to education in developing nations, indicate the possibility of applying space technology to lower the cost of ITV over wide areas, and propose a pilot cost-effectiveness study of alternative approaches to modernizing a national education system. If expectations are validated by the study, ITV might serve as an essential element in a modern educational system having the following features:

- o Program content and format controlled by the nation (or group of nations) being served.

- o Instructional material developed with the assistance of the industrialized nations, and used widely throughout the world.
- o Adequate but austere quality of service, with ITV receivers or other educational media used on a communal basis.
- o Compatibility with existing technical standards and frequency allocations wherever possible.
- o Capability for evolution toward higher powered satellites and lower ITV receiver costs (initial and operating).

2. Context for Decision on Educational Development

The United States has a vital interest in aiding developing nations to become economically viable. In furthering this interest, we have joined with these nations in enlisting and mobilizing resources that may be hidden, scattered, or only partially utilized. We have given generously of our resources, and sought to nurture a variety of institutions for invigorating stagnating traditional societies. Perhaps the most important of such institutions in any nation is its educational system.

In his 1966 Message on International Education and Health, President Johnson has requested the Congress

"...to strengthen our capacity for international educational cooperation; to stimulate exchange with students and teachers of other lands; to assist the progress of education in developing nations; to build new bridges of international understanding."

Of direct relevance to our discussion here is the President's proposal that we

"...Develop new techniques for teaching basic education and fighting illiteracy. --Our own research and development in the learning process can be adapted to fit the needs of other countries. Modern technology and new communications techniques have the power to multiply the resources available to a school system.

"I am calling on HEW to support basic education research of value to the developing nations.

"I am requesting AID to conduct studies and assist pilot projects for applying technology to meet critical education shortages."

It now appears possible for the United States to make a dramatic contribution to international education by combining the technology of space communications with that of a new but proven educational medium—instructional television. Prior to undertaking any such major initiative, however, the United States should undertake a cost-effectiveness study of the available alternatives for modernizing a national education system.

2.1 Need for Educational Technology

All nations are increasingly attaching the highest priorities to education and training because modernization cannot proceed far without development of human resources. There is a growing awareness of the need for better balance in developing national resources—human as well as physical. Over the next few decades, a major investment will therefore be required in education and training to secure the skills (in appropriate mix, quantity, and quality) to meet the needs of modernization.

To date, progress in modernization has been seriously impeded by shortages of skilled manpower, especially teachers. Although now being partially offset by the importation of teachers from industrialized nations,

shortages may be expected to persist for years, and possibly decades. The needs of developing nations are, however, too urgent and massive to be long deferred.

Faced with the prospect of a continuing shortage in teachers, we look to technology to increase the productivity, lower the unit costs, and improve the quality of the educational systems of the developing nations. By coupling teachers with appropriate media — radio, television, audio-visual materials, language laboratories, and programmed instruction — we can multiply the effectiveness of whatever meager resources are likely to be available.

2.2 Potential of Instructional Television

Television can play an important role in the development process. In contrast to its primary use in the United States for entertainment, news, and advertising, television in the development context is likely to emphasize education, training, and motivation of the people to work toward national objectives. In developing nations, literacy must be increased, personal and communal hygiene improved, agricultural and industrial productivity increased, market information disseminated, and, most important, the people persuaded that progress is being made in reducing poverty and promoting social reform. Basic skills and concepts must be acquired by the people before any vocational training can be effective.

Combining sight with sound, television can leap the barriers of

illiteracy and reach its audience with great impact. Its effectiveness has been thoroughly explored both in the United States and abroad (e.g., in France, Italy, Japan, Samoa), at all levels of education, for vocational and industrial training, in classrooms and dispersed adult populations, and by government, industry, and private foundations. The results of approximately 400 quantitative studies comparing instructional television with conventional classroom teaching have been summarized by Schramm as follows:

"There can no longer be any doubt that students learn efficiently from instructional television. The fact has been demonstrated now in hundreds of schools, by thousands of students, in every part of the United States and in several other countries. Schools and colleges have been able to teach virtually every subject effectively by television. The conclusion is that the average student is likely to learn about as much from a TV class as from ordinary classroom methods; in some cases he will learn more and in some less; but the over-all verdict has been, 'no significant difference.' "¹

The essence of the matter is that as much learning takes place in a TV class—where teacher and technology are coupled — as in an ordinary class.

1 Schramm, Wilbur "Learning from Instructional TV," Review of Educational Research, American Educational Research Association, Washington, D. C., April 1962, pp. 156-167

3. Alternatives in Educational Systems

3.1 Need for Systems Approach

In analyzing an enterprise whose objective is the design, implementation, and operation of a modern educational system for a developing nation, IBM proposes to apply the tools used in military weapon systems analysis and integration. Such an overall systems approach to education would provide:

- o a conceptual framework for planning
- o a comprehensive and orderly consideration of the functions to be accomplished and the means (men, methods, and machines) for accomplishment.
- o a long-term view covering the entire system over an extended period of time—from development through operations— and providing for an ordered sequence of events leading to the timely achievement of the various educational objectives.

In such an approach, ITV or other educational media would be regarded as a subsystem contributing to overall system effectiveness. The essential task in educational system design is to combine the teachers and students with the appropriate technology so as to achieve the desired level of system effectiveness. With a systems approach, due consideration would be given to such diverse matters as the training of teachers and electronic technicians, the requirements for spare parts and fuel provisioning, the social problems

involved in introducing change into a traditional society, and the possibility of preparing certain kinds of program materials (e.g., science and mathematics) in industrialized nations for widespread use throughout the world.

3.2 Choices of Mix of Resources

The alternative ways of implementing an educational system derive from the choices in the relative proportions of teachers and technology, and the choices among teaching media. As shown in Table 1, System I is typified by the conventional classroom with its heavy reliance on teachers. Systems II and III combine teachers with a single medium (such as ITV or educational filmstrips); System IV combines teachers with two such media. The use of other teaching aids such as language laboratories and teaching machines would not be considered because of either their cost or specialized nature.

3.3 Instructional Materials

In developing nations there may not only be a lack in quantity and quality of available teaching resources, but also an acute shortage of instructional materials designed to meet basic educational needs, virtually no native base of industries ancillary to education (i.e., publishing, testing, and communications), and only a rudimentary transportation system for distributing instructional materials. Moreover, within any such nation there may be a serious maldistribution of educational resources in that there may be shortages of teachers for the rural schools and of individuals qualified to teach scientific

	Mix of Resources in Educational System		
		Technology	
System	Teachers ¹	ITV	Other Media ²
I	X		
II	X	X	
III	X		X
IV	X	X	X

Table 1 -- Principal System Alternatives

1 The level of teaching skill might vary from that of a village discussion leader to that of a trained teacher.

2 Other media includes filmstrips, slides, or motion pictures.

and technological subjects (including modern agricultural and industrial methods) by demonstration rather than by rote.

There is therefore a need for a larger vision, one global in scope. We must couple the vast knowledge-generating communities of the industrialized nations with their native counterparts in developing nations. In analogy to a system of interconnected electrical power networks, we must visualize (as shown in Figure 1) a global system for the generation, distribution, and "consumption" of education and training. The generating plants in the various nations are the academic communities, the educational systems and the industries ancillary to education. Educational needs and goals would be jointly determined by the governments and educational communities in developing nations, assisted by their counterparts in the industrialized nations. These needs and goals would then guide the operations of the global system. The ultimate objective would be to increase the general learning ability within developing nations so that education and training can become a self-generating, self-sustaining process. Teachers, students and knowledge would flow in both directions between the generating plants in the form of teacher and student exchange, through various educational media, and through the training of technicians needed in the educational process. In the near-term, the flows would be predominantly toward the developing nations; in the longer-term, the industrialized nations would benefit greatly from cultural exchange and educational research abroad. The flows would necessarily occur under the control of the developing nations involved. Some

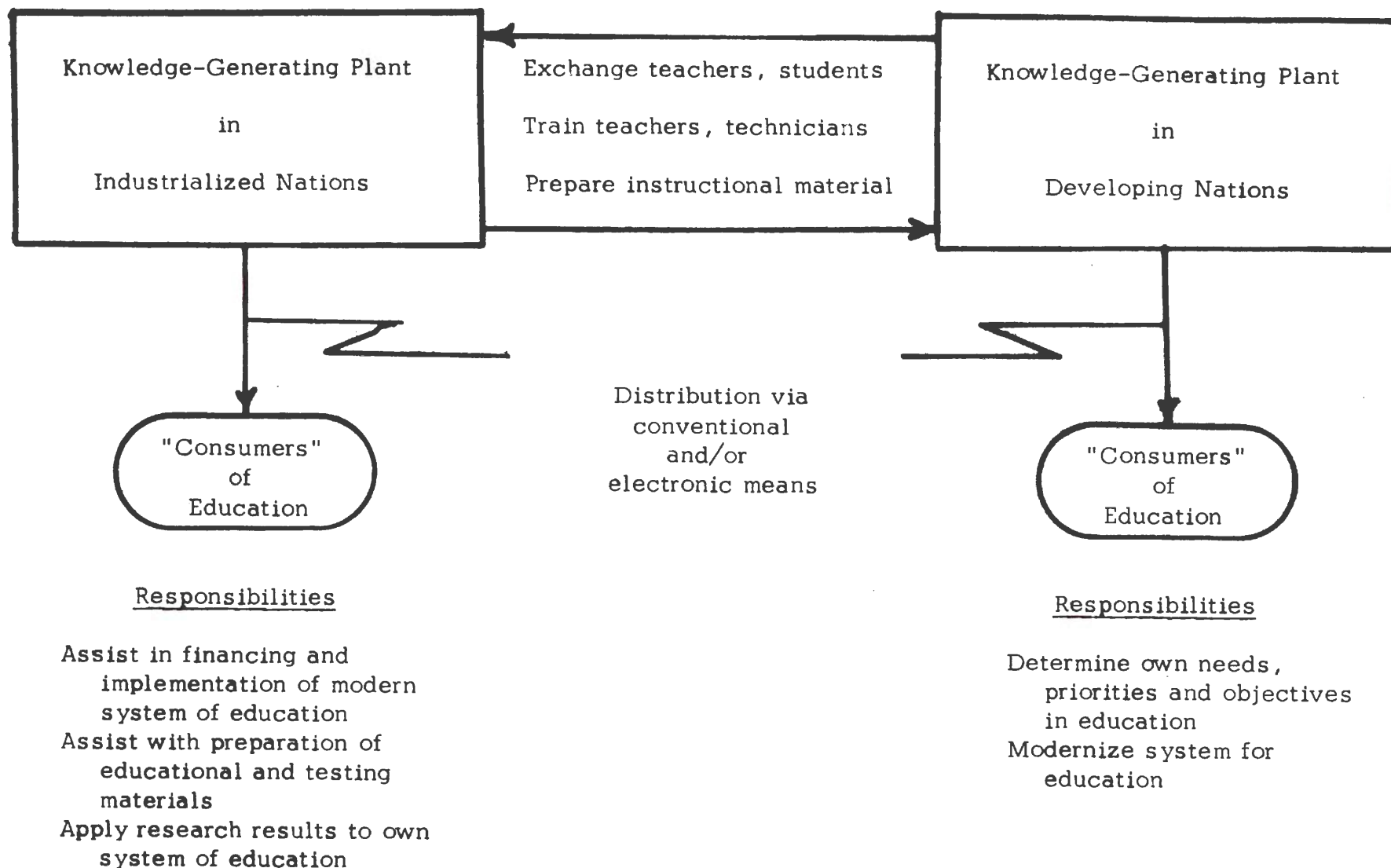


Figure 1 - Global System for Generation, Distribution, and "Consumption" of Education

form of mediating control is necessary not only for reasons of national sovereignty, but also because effective education springs from a historically determined cultural soil, and not as an isolated transplant of another culture.

Giving due recognition to the need for control by the developing nations, one can nevertheless see the benefits of recorded televised instruction utilizing the best teaching talent wherever it may be found. Such ITV programs could be produced with native consultation in the United States or in the developing country by an experienced television teacher and crew, and the instruction tried and modified before being recorded and exchanged. Accompanied by a good teacher's guide and other necessary educational and testing materials, these programs could then be shipped to the developing nation and broadcast over its own ITV system. The developing nations would then have access to the best of both native and foreign teaching talent, when the latter might be otherwise either unavailable or available only at high cost.

3.4 Choices in ITV Systems

Television signals are transmitted at frequencies such that the receiving sets must be approximately within line of sight of the transmitting antenna. The higher the tower on which the antenna is mounted, the greater is the number of sets which may be served by a single transmitter. In addition to the need for the widest area coverage at a local level, there is also a need for interconnecting the several transmitting stations so as to provide national and/or regional network facilities.

The alternate means for implementing a wide-area ITV system are the following:

- o A ground-based system utilizing hundreds of broadcast stations, together with an interconnecting network.
- o An aircraft-based system utilizing a small number of ground-based, program-originating stations to transmit to a fleet of hovering aircraft. The transmitters in these aircraft are then used both to relay programs to the receivers on the ground and to provide the network capability by relaying to other aircraft.
- o A space-based system, similar in concept to the aircraft-based, but utilizing satellites to relay programs from the originating stations to the receivers. Because of the extremely great areas covered, the network capability is already inherent in the space-based system.

3.5 The Nature of the TV Satellite

One of the most promising uses of space is that of satellites for TV broadcasting of educational and informational material directly into standard receivers. The coupling of advanced space technology with the urgent worldwide needs for economic development creates new opportunities for furthering U.S. policy objectives.

From a technical point of view, the principle of operation is quite

simple. For each region to be served, one or more ITV satellites would be emplaced in synchronous orbit about the earth. The region being served might be a single large nation (e.g., India or Brazil) or a group of smaller nations having sufficiently common interests, languages, and cultures (e.g., a grouping of Colombia, Venezuela and Panama). Originating under local control, programs of an educational or informational nature would be transmitted from broadcast studios in the country concerned to the ITV satellite, from which they would be immediately rebroadcast directly into receivers in the villages. Limitations of capital would probably dictate the use of communal receivers, each serving several hundred people on a time-shared basis. The problem of dialects would be handled by multiple audio channels with each video channel.

The technology of communications satellites is now sufficiently advanced to permit the development and emplacement of an interim ITV satellite system by 1970, and, with further anticipated progress, a full-scale system by 1975. Using technology which is near at hand, the interim system would offset the low power of its satellite transmitter by means of receivers more sensitive (and more costly) than standard home receivers. With advances in technology, the interim system could evolve toward the full-scale system, using higher powered satellites and lower cost, standard receivers. Since the dominant costs in the system are those associated with the acquisition and operation of the receiving installations, it is essential that we increase power

aloft in order to reduce cost on the ground.

The essential features of the ITV satellite system would be:

- o Program content and format controlled by the nation (or group of nations) being served.
- o Instructional material developed with the assistance of the industrialized nations, and used widely throughout the world.
- o Adequate but austere quality of service, with ITV receivers or other educational media used on a communal basis.
- o Compatibility with existing technical standards and frequency allocations wherever possible.
- o Capability for evolution toward higher powered satellites and lower ITV receiver costs (initial and operating).

4. Analytic Approach for Evaluation of Alternatives

In analyzing the alternative educational systems and their principal variants, we can treat each in terms of its associated costs and benefits flowing in time. On the cost side, we must estimate the various elements of recurring and nonrecurring cost from the time of decision to proceed with system planning and development until it is replaced by a successor system. On the benefit side, we must specify one or more quantities in terms of which we can measure system effectiveness.

The alternatives would then be ranked as to their relative costs for achieving a specified level of system effectiveness. Because of the rapidity of technological advance, it would be desirable to limit the time horizon for planning purposes to about 15 years. Essential to the analysis is a consideration of the sensitivity of the results and conclusions to any variation in the critical system parameters.

5. IBM Proposal for Pilot Study

Systems for education and training presently exist in the developing nations. In deciding to modernize their present system, government officials and educators of the nation involved must deal with the basic questions of ends and means:

- o What knowledge and skills should be developed?
- o With what relative priority?
- o How and by whom?

The U. S. Government, together with American educators and industry, can assist their native counterparts in addressing these questions and finding solutions appropriate to that country's needs.

IBM proposes that a pilot study be undertaken of the costs for facilitating and operating a modern system to achieve specified educational objectives. The U. S. Government would specify the countries to be studied and the educational objectives sought. To preserve its options on implementation and to derive the deeper insight yielded by a comparative study, the U. S. Government should specify more than one country. The principal factors influencing the choice of country should relate to its political stability, strong desire for modernization of its educational system, physical area, population distribution, and current status of its educational and mass communications systems. Concrete evidence of the desire for modernization might be derived from the interest shown by that nation in educational

experiments both in the U. S. and abroad (particularly American Samoa).

The IBM Corporation would undertake the following tasks:

- o Definition of the educational system alternatives relevant within the framework of illiterate or semi-literate student populations, minimally trained teachers or village discussion leaders, and broadcast communications.
- o Development of equations for estimating the various costs for development, facilitation, training, testing, programming and operating.
- o Assessment of the relative merits of the various alternatives and of their capabilities for evolutionary growth.
- o Analysis of the sensitivity of system performance to variations in physical parameters such as reliability, power and weight and in educational parameters.

In addition, a preliminary examination would be made of such questions as:

- o Methods for evaluation of present educational levels and instructional materials and continuing evaluation of achievement of educational objectives.
- o Feasibility of local production of instructional materials versus production in the United States or other industrialized nations.
- o Relative merits of alternative arrangements for financing the

implementation and operation of a modern educational system.

- o Arrangements for effective utilization of skills of curriculum specialists, learning theorists, media and communications specialists, and economists to assist educators and administrators of the developing nations.
- o Feasibility of local manufacture of ITV or other educational media versus manufacture in the United States or other industrialized nations. Local manufacture may reduce requirements for foreign exchange and also stimulate development, but lead to problems in equipment quality.

A pilot study such as this would benefit the U. S. Government in the following ways:

- o By identifying more meaningful alternatives for system implementation.
- o By providing estimates of the approximate costs for implementing these alternatives.
- o By identifying potential requirements for research and development to make a particular approach feasible.
- o By identifying potential requirements for additional investment in infra-structure (i.e., highways, electric power grids) within a developing country to meet educational needs.

- o By identifying potential social or political consequences which may be associated with the alternative approaches.

The design approach for the IBM study would be such as to permit a subsequent elaboration of the cost-effectiveness model if that should prove desirable.

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

March 18, 1966

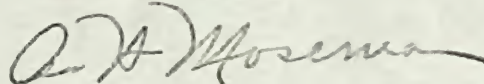
General James D. O'Connell
Director of Telecommunications Management
Office of Emergency Planning
EOB
Washington, D.C. 20504

Dear General O'Connell:

I note that Dr. G. C. Sponsler, Director of the Center for Exploratory Studies, Federal Systems Division, IBM, forwarded to you a copy of his letter addressed to me dated March 11. Several of my colleagues in A.I.D. and I met with Dr. Sponsler and Mr. Abraham Katz on March 15 to review his study. It has been agreed that we will work closely with Dr. Sponsler and his staff to identify those relevant factors which must be taken into account in the educational satellite TV system study, to insure that the study will be as reliable and meaningful as possible.

We are very much interested in pursuing this type of research and appreciate your willingness to cooperate with A.I.D. as a channel for financial support. However, once an acceptable proposal has been developed, A.I.D. will be in a position to consider a direct contract with the IBM Center for Exploratory Studies.

Sincerely yours,



A. H. Moseman
Assistant Administrator for
Technical Cooperation and Research