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A REGIONAL APPROACH TO EDUCATIONAL ALTERNATIVES

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Had this regional practicum on Alternatives in Education been held just two weeks later, the timing would have been exactly five years from the dates of the SEAMEO Instructional Materials Workshop, held in Saigon in May, 1967, from which the impetus came for establishing the SEAMEO Regional INNOTECH Center. At that workshop a paper was presented on "The Potential of Newer Instructional Media for Educational Development in Southeast Asia." It was intended to stimulate thinking and action among educators in Southeast Asia regarding educational alternatives. It also proposed in very rough fashion the broad outlines of a plan for utilizing a regional approach to the development of educational alternatives in Southeast Asia. Since that paper and this one suffer common authorship, this document might be regarded as a restatement and an updating of that first call to action. Because the earlier statement has considerable relevance to a great deal of what has been said this week about alternatives, I have appended to this paper the full text of that original statement for easy reference.

Before saying anything about a regional approach to alternatives, I think it is important to get our terms of reference straight. To put it another way, I would like to make clear what I have in mind in talking about alternatives and try to summon your temporary acceptance of my definitions while you hear and react to what I have to say.

First of all, in my original paper, and still today, I dismiss efforts to shore up and improve the present system from my thinking about alternatives. Improving the quality of teachers and teacher training, getting better text books, substituting tables and chairs for desks in fixed rows, and other manipulations within the present system are things we have been talking about for decades, and putting the label of "alternatives" on such "reforms" today does little to get at the major problems in education. Even curricular reform and provision of more relevant educational objectives, as badly as they are needed, will have little impact on the world crisis in education if they are simply implemented within the present system. Even if Silberman is correct in arguing that schools

can be transformed from the grim, joyless, intellectually sterile, and aesthetically barren institutions, he finds them to be in his book, Crisis in the Classroom,⁽¹⁾ so that they become joyful, intellectually stimulating, and aesthetically rich, the stark fact remains that two-thirds of the world's school-age population will have to receive its education outside these joyful and intellectually stimulating institutions. As suggested in the 1967 paper, this is true simply because there are not enough resources to build enough classrooms, train enough teachers, and print enough text books to meet the requirements for providing formal education for all.

I must not leave my definition of alternatives with a statement of what I dismiss. By refusing to talk about ways of trying to make the present system work, it appears that I place myself in the rebel camp of Illich, Goodman, Reimer, and Holt, all of whom believe that the present system of formal schooling must be replaced. This belief I do indeed share with the rebels, though I believe it for different reasons than those they argue. But the treatment of alternatives in this paper is in terms of alternatives to the present system -- not alternative ways of trying to make the present system work. New structures, new delivery systems, new modes of learning, new definitions of formal and informal education -- these are the objects of the search for alternatives; not new curricular materials, new gimmicks for improving classroom teaching, new philosophies which give children more choice, more enjoyment, and more freedom within the existing system. Unless we believe that the major educational effort should continue to be directed to the select few and that we should forget about the two-thirds of the population denied this benefit, my definition of alternatives would seem to be reasonable.

Dr. Illich believes that schools as they are now constituted should be abolished because they are evil; they are doing more harm than good. There are others who share this belief with Illich, and their criticisms of the present system cannot be easily dismissed. However, critics of the de-schoolers can argue, with history to back their arguments, that evils can be remedied without abolishing the system within which they exist. Further, it may not be easy to persuade the supporters of schools (parents, communities, employers, even nations) that schools are evil.

(1) SILBERMAN, CHARLES E., CRISIS IN THE CLASSROOM.
New York: RANDOM HOUSE, 1970. Pp. 1 - 553.

I would not belittle those who are setting out to convince the supporters of schools that the schools are actually doing more harm than good. Their arguments are sound and their cause is worthy. However, it is my belief that even while they are carrying on this battle another factor will win the case for change and will force a restructuring of schools as they now exist. This factor is simply economic necessity. Five years ago, in the appended paper, it was pointed out that with less than half of the school-age population in Southeast Asia actually in school, and with countries in this region spending up to 35% of their total national budgets on education just to provide for the minority in school, it was economically impossible to expand the school system so as to extend equal educational opportunity to all youth, following the traditional approaches which characterize the present system.

Through the past five years the impossibility has been compounded by a rapid population growth, an explosive increase in the amount of knowledge to be taught under the traditional objectives of formal schooling, and spiraling costs of all components in the present system -- the cost of buildings, the cost of teachers' salaries, the cost of text books, the cost of administrative and supporting services.

This is the persuasive argument for educational change: the argument of economic necessity. It was suggested in the earlier paper that "there is in Asia a far more urgent need for efficiency and greater economy in operating the educational establishment than there is in the more affluent societies where the pace can be slower and the conservative elements can be accommodated with more patience." To put this observation in another form, "economic necessity may force transformation of the traditional educational system in the developing countries more quickly than it will motivate such action in the affluent developed societies."

Today it would be more difficult to defend the above observation than it was five years ago. I say this simply to illustrate the pervasiveness of the economic factor. In the United States during the past year there has been a sudden out-pouring of treatises and papers on the economic crisis in education. Why? Across the United States communities and state legislatures are rebelling at the high cost of education. The majority of state-supported higher education institutions took major budget cuts in appropriations for their support last year. In Southern Illinois where I have my home, and where I spent last summer on home leave, many school districts are bankrupt. They do not have enough income to meet expenses. Teachers

salaries are paid in script -- a kind of promissory note which can be cashed at local banks and local business establishments at a considerable discount. Residents of these communities do not really wish to abolish schools, but they are now taxed beyond their capacity to pay. And schools in Southern Illinois, as in other local school districts across the United States, depend upon the local tax base for their primary financial support. Perhaps those bankrupt school districts can be bailed out by financial support from state or federal monies. But how long can this go on? Such monies also come from the taxpayers. Inevitably, pressures for economics will force educational change and the development of new approaches for achieving educational objectives even in the affluent societies.

Critics of educational alternatives can argue that evils can be remedied, but few can argue away the fact of depleted resources for the continually rising cost of the traditional system of schools. Parents, communities, and national bodies may not be easily convinced that schools are evil, but they can be convinced that the cost of schools as they now exist is greater than their ability to finance such costs.

Silberman reports that in the United States the national bill for higher education came to more than \$20 billion in 1969-70 and that the public schools (elementary and secondary) in that same period cost more than \$35 billion. These figures are actually reported with pride, as evidence that the expansion and democratization of education in the States has been an extraordinary achievement.⁽¹⁾ But my view of the extraordinary is that these are extraordinary sums of money. It would be foolish to suppose that educational expenditures can continue at these levels and beyond without questions being raised about the possibility of more economical ways of carrying out the business of education now done at such high cost by the traditional educational system.

Do alternatives exist? Is there any way to see that a child learns what he needs to learn other than to seat him in a classroom with twenty-five or thirty other pupils and have a teacher teach him? Too many of us cannot move beyond the negative responses we are inclined to give to these two questions. Hopefully this practicum has served to broaden the horizons. The fact is that very little of the total learning experienced by any individual takes place in the formal school system. This is simply to say that even those privileged few in Asia who are exposed to the formal school system do most of their learning outside the schools. And for the majority who for one reason or another have very little exposure

(1) SILBERMAN, CHARLES E., CRISIS IN THE CLASSROOM.
New York: RANDOM HOUSE, 1970. pp. 15 - 17.

to the formal school system, all learning takes place outside the classroom. Thus, alternatives do exist and are actually in operation. People are learning outside the formal school system. Among the alternatives already operating are: (1) the home and family where the child learns to communicate, develops social skills, and, in Asia, frequently learns a craft or trade through the family apprentice system; (2) private schools which provide a variety of training and instruction ranging from typing and foreign languages up to university degrees^{1/}; (3) the cinema which is no longer limited to the large urban areas in Southeast Asia, but is rapidly spreading to smaller towns, provides a wide range of learning experiences forming probably the most potent window on the world in the total environment; (4) the press, radio, and television are operative alternatives to formal classroom learning, disseminating information and providing learning experiences daily, even though sometimes misdirected, in all countries of Southeast Asia; (5) social and religious groups, though multi-family, are in many ways as important as the home and family in providing both early and continuing education with regard to values, cultural habits and beliefs, and styles and modes of living in Southeast Asia.

All of us know about the existence of these environmental components which shape behavior and motivate and guide learning. Few of us, however, are willing to admit that they do as good a job as the school, or to go even a step further and agree to honestly delegate to these non-school environmental components the achievement of some of the objectives which we set for the school and incorrectly claim as school achievement when actually the non-school components are doing the job.

^{1/} In Manila the majority of university students are enrolled in private universities while only a small number is enrolled in the publicly subsidized University of the Philippines. While the University of the Philippines struggles to obtain financial support both from the Government of the Philippines and from external sources to meet its budget, these private universities actually operate at a profit, their income coming from tuition fees. In Thailand 68% of secondary education is carried on in private schools -- again schools which operate to make money for their owners. As an alternative to a costly public school system, private schools are already providing some healthy competition.

When I refer to these learning resources as operative alternatives, I do not mean to suggest that any one of them could be considered as an alternative to the existing school system. They are mentioned primarily to dispel the belief that learning -- that is real learning -- must take place in the classroom. And if a start were made toward developing educational alternatives by clearly identifying objectives to be achieved, it could very well be that the search for the most effective way of achieving these objectives would identify some of these non-school components as being the best instrumentality in terms of balance between cost and efficiency.

There are alternatives, also, which could serve to gradually transform the existing system without destroying it at the outset. For example, there is now carefully researched evidence that the time required to obtain educational objectives could be materially reduced. If the time-serving characteristic of the existing system could be eliminated, and through better programming of the curriculum, the objectives set for the secondary cycle of schooling could be achieved in two years instead of our costs would be reduced by half. Such an innovation would probably appeal to most Ministers of Education and Ministers of Finance in Southeast Asia.

Educational research also suggests that certain kinds of learning can take place self-directed without a teacher just as effectively as with the teacher. Such findings usually frighten teachers, who immediately see themselves without jobs. But in a situation where there is a shortage of teachers and in situations where there are no teachers (as in some of the remote rural areas of Southeast Asia) full exploitation of that finding might at very low cost provide certain kinds of learning experiences where none now exist.

The potential of existing educational technology for providing alternatives has already been covered by Mr. Ho Tong Ho and Dr. Ellison. And it must be remembered that the full impact of educational technology on educational change and the variety of alternatives provided by this aspect of our modern world cannot be measured only in terms of what exists today. New developments in educational technology are occurring so rapidly that it is impossible to foresee what may be available in the future. Already the available technology in the field of mass communication infinitely outreaches our capacity to use it effectively. And as the focus of research moves toward the human organism itself and discoveries are made in such fields as genetics and biochemistry,

it can be expected that new learning theories will be developed which may change completely the way we educate -- or, at least, open alternatives not in our thinking today. The point is that the alternatives provided by educational technology are neither fully tested nor fully known.

But, assuming for the moment that you are willing to allow yourselves to be unsettled by either the evils or the economic impossibility of the present system, and given the alternatives which do exist, what can be done to bring about change? And, to move closer to the subject of this paper, what can be done on a regional basis -- through a regional approach -- to bring about change?

These questions must be addressed in order; i.e., it is necessary to know generally what must be done to bring about change before attempting to identify those parts of the job which might be done effectively and economically through the pooled resources and joint effort of a regional approach involving several countries.

Certain assumptions underlie the following attempt to answer the first question -- what can be done to change the present outmoded, and no longer workable, educational system? Some of the assumptions are arguable, but I believe they can be defended:

1. Educational change will not come overnight by decree or edict. Certainly the present school system will not be abolished in this fashion. In the first place, alternatives are as yet but possibilities which can and should be considered. They are not fully developed and tested systems which are ready to be utilized at the moment as a replacement for what now is. The combination of alternatives which fits one situation may not be suitable for another. Replacement of the existing system will probably be step by step and piece by piece through systematic trial and experimentation with alternatives. Further, as pointed out earlier, the roots of the educational system lie deep in the institutional base of any society, and in a very real sense one cannot change the educational system without changing the society. Some of the advocates of radical educational reform believe that needed societal reforms can be accomplished by changing the schools, and while this may have some validity, it is likely that change in schools cannot move too far ahead of changes in the society without generating determined resistance. However, assuming that change must be gradual does not dictate a leisurely pace in getting started with the job of developing alternatives. Problems are of crisis proportion and cannot wait too long for solution. This leads to the second assumption.

2. Change is inevitable. More youngsters to educate, mounting costs, and public pressures will force change whether we like it or not. Such change can come from breakdown of the present system and ad hoc, desperation solutions; or change can be directed or at least pointed in reasonably safe directions by planned solutions. The latter is possible only if a start is made now toward the development of acceptable alternatives, and by acceptable I mean alternatives which prove to be the most effective in a given situation.

3. When better ways are demonstrated, eventually they will be accepted. Among the assumptions listed here, this one is perhaps the most vulnerable to attack. But this article of faith does not say that the existence of better ways will make them acceptable. It implies that deliberate efforts to demonstrate the worth or benefit of a better solution must be mounted, and it assumes at least a minimum level of reasonableness and common sense on the part of most of those who plan, operate, and support the educational establishment.

Consensus cannot be expected. Reactionary elements cannot be eliminated. At some point hard decisions will have to be made regarding the implementation of educational change. This may seem to be inconsistent with the first stated assumption, and probably that statement should be qualified by recognizing that after reaching a certain point in trial and experimentation and after attaining a workable level of acceptance, decree and edict must come into the picture in order to implement change. But it is still assumed in this paper that when it is proven that something will work and when it is demonstrated that a new approach is superior to what is now being done, acceptance can be expected. As a special note it should be pointed out that the "something now" often is discarded when research results indicate that it is no more effective than the present system. The argument is that if it is no better than what we are doing now why bother with it? If, however, the "something now" costs considerably less than the present way of going about it and there is no significant difference in the results of the two methods, the "something new" is definitely superior in a situation beset with economic difficulties simply because it costs less. And it must be kept in mind also that in many places in Southeast Asia the base of reference is either no or extremely limited educational opportunity. In these situations systems which are even less effective than the teacher-classroom delivery system are better than what exists (namely nothing) if they are financially manageable.

4. The development of better ways calls for research, trial, and experimentation. The development of alternatives as defined in this paper calls for a special kind of experimentation. It requires discarding fixed beliefs which keep the researcher from moving beyond the teacher-classroom approach, and it requires an honest search for the most effective ways of carrying out educational purposes and of solving educational problems. Until better terms come along, "innovation" and "innovators" are needed to develop new approaches.

5. For experimentation and innovation to flourish, certain conditions must be met. In the 1967 paper these conditions are described as environmental prerequisites. As seen by the author, they are listed and described in the appended paper. Briefly they include (1) trained innovators who can serve as change-agents and both stimulators and performers of educational innovation; (2) appropriate administrative structures to provide "homes" for the innovators; (3) adequate facilities and equipment for research, development, experimentation, and demonstration; (4) freedom and authority to carry out unrestricted experimentation, however radical the new approach may seem; and (5) channels of communication whereby researchers can have current and up-to-date information about educational change in other settings and whereby research and operational education programs can be interlinked.

Stating these assumptions actually serves to outline an answer to the question -- "What can be done?" In summary, the way to go about it, accepting these assumptions, looks something like this:

- Accept the fact that change will be accomplished step by step, and in gradual fashion, rather than by one fell swoop, overnight. At the same time, try to move fast enough to give planned direction to change which will inevitably be forced by economic necessity.
- Establish the environmental prerequisites for developing, trying, and eventually implementing educational alternatives. These include the existence of innovators (skilled change agents), administrative structures geared to the needs and requirements of innovation, adequate facilities and equipment, freedom and authority to try new things, and access to a wide range of information about what has been tried in similar situations elsewhere.

- Through research, trial and experimentation, develop and then demonstrate the utility of better ways of going about the teaching/learning business. Start this process by defining clearly the purposes to be accomplished by an educational system and the objectives to be achieved in each part of that system; then search out the most effective means of accomplishing those objectives within the constraints of a particular situation, using the full range of alternatives in this search without assuming that the teacher-classroom approach as now structured is fixed and unalterable. The searching out will involve the process indicated above -- research, trial, experimentation, and demonstration -- before the "most effective means" can be implemented.

Admittedly, this is a very broad outline of what can be done which could not serve in any sense of the word as a detailed plan of action. In fact, a great number of project proposals could and would have to be developed within the framework of this general outline to get things moving. But this broad, general answer will serve as a basis for considering what can be done -- that is, what part of the total job can be done -- on a regional basis.

Turning now to the topic of this paper -- "A Regional Approach to Educational Alternatives", I would like to indicate certain considerations which underlie the suggestions regarding the role which a regional program could play in bringing about change:

1. Before any success can be expected from regional endeavors there must be definite commitment on the part of the participating countries to work together. This commitment must be found at high levels within each government as well as among the educators.
2. There must be common problems on which to focus joint effort. The common problems may manifest themselves in different ways in differing national situations, but a reasonable degree of sameness must exist.
3. Whatever is developed as regional, whether it be institutionalized in a center or whether it be a cooperative program, must belong to the participants. Regional involvement in planning, regional leadership, and use of regional bodies in policy formation and program planning will create this sense of ownership on the part of the participating countries.

4. It is fully recognized that changing educational systems or introducing change into existing systems is the sovereign right of national governments. No regional entity or institution, no matter how firmly the participating countries are committed to the program, no matter how deep the sense of ownership on the part of the participants, can control, direct, or decree change within national systems of education. Trial, experimentation, demonstration can be done at the regional level, but actual implementation must take place at the national level under national decision making and national direction. Beyond experimentation and demonstration, a regional program or institution can serve to support and encourage change in all the participating countries by helping to develop the environmental prerequisites, providing the focal point for sharing of resources, and perhaps creating prototype solutions to common problems for further experimentation. But in a very real sense, a regional institution must of necessity remain on the sidelines and cheer when it comes to the actual implementation of change.

5. There must be available resources, both manpower and financial resources, for implementing regional approaches. To the extent that doing certain things jointly eliminates the requirement for each participant to do it separately, a good part of the resources can come from within the region by sharing costs. Beyond this, it is difficult for developing countries to divert resources to regional programs when national education programs are under-financed. External assistance will probably be required.

Here in Southeast Asia the commitment to regional cooperation in education exists. An organizational structure, the Southeast Asian Ministers of Education Organization (SEAMEO), has been created to implement this commitment. SEAMEO has legal status by virtue of an international charter which has been signed by the Ministries of Education of eight Southeast Asian countries^{2/} and subsequently ratified by governmental action within each country. There are common problems. These have been identified through national and regional seminars undertaken under SEAMEO auspices. Resources are available both from member country commitments and from multilateral, external support of the SEAMEO programs. So as effort is mobilized in Southeast Asia to develop educational alternatives, it is possible to consider seriously what parts of the total task can be carried out economically and effectively through joint efforts. Consideration of a regional approach to educational alternatives is not just an academic exercise.

^{2/}The eight countries include Indonesia, the Khmer Republic, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

Proposals for a regional plan of action were included in the 1967 paper. (See pages 161-162 in Addendum A) Briefly, these proposals envisaged the establishment of a SEAMEO regional center closely linked to national programs or centers in each of the SEAMEO countries. The center would serve to train innovators and to develop prototype educational systems and solutions of potential utility throughout the region. The national centers would provide "homes" for the innovators trained at the regional center and would adapt centrally developed prototypes to fit local conditions, and eventually install the new system in the national education system.

It was suggested that the regional center might be organized into divisions covering the major areas to be studied; e.g., basic education, technical training, adult education, and so on. In each of these divisions, resident specialists and research fellows (trainees) from the member countries would work together as a team to develop prototype systems in the particular research area, the research fellow receiving training while actually working in a problem-solving situation. In addition to the research divisions, it was proposed to have specialized technical resource units located at the center to backstop the research programs in such areas as measurement and evaluation, programmed instruction mass media, instrumentation and engineering, and so on.

The proposed center was to be under the policy direction of a regional governing board made up of representation from each participating country, this board to identify common problems, establish priorities, and otherwise provide policy and program direction to the center. This first proposal anticipated that as the national centers became organized and staffed with innovators trained at the regional center, the functions of the regional facility might change and, at some point, would possibly outlive its developmental utility, and, if continued, would probably focus its efforts on clearing-house and information exchange activities.

This very general proposal put forward in the 1967 paper for consideration was taken by the Ministry of Education in Vietnam and used as the basis for proposing to SEAMEC that a SEAMEC regional Center for Educational INNOVATION and Technology (INNOTECH) be established in Saigon. The proposal was approved in principle and the SEAMEO Secretariat (SEAMES) set about the task of developing the project. Under the leadership of a senior educator assigned to SEAMES by the Vietnamese Ministry of Education, and by utilizing national and regional seminars as mechanisms for gathering data and information and involving large numbers of Asian educators in project development planning, a Five-Year Project Plan was prepared and subsequently put before SEAMEC for approval.

INNOTECH emerged from this planning, by and large, as an elaboration of the original proposal. The plan as approved by SEAMEC involved the establishment of a regional center together with the establishment and/or identification of national institution. Operating under a regional governing board, the regional center would initially have three divisions: (1) an administrative division; (2) a training and research division; and (3) a library and information services division. The Plan stipulates that no formal administrative relationship would be established between the regional and national centers, as the national centers will be independent and will be operated entirely by the respective member countries. The regional and national centers will work in close cooperation on professional matters, and the role of the regional center will be to assist the national centers and their programs by training personnel, developing prototype materials and approaches for trial and modification, and by giving general professional support to the national centers. The national centers are expected to feed back information to the regional center on effectiveness of training, suitability of prototype solutions and materials, and other experimental work carried out at the national level.

The Proposed Development Plan⁽¹⁾ declares several essential requirements for successful operation of a national center or program:

1. The national center must be within the mainstream of educational planning and policy formation;
2. It must be adequately staffed, with imaginative and dynamic leadership;
3. It must have adequate budget support; and
4. It must have either as assigned functions or included in the scope of outreach such activities as research and evaluation, curriculum development, educational radio and television, audio-visual education, and other instructional media development.

(1) SEAMEO REGIONAL CENTER FOR EDUCATIONAL INNOVATION AND TECHNOLOGY:
PROPOSED DEVELOPMENT PLAN. SEAMEC - Bangkok, Thailand.
January 1970

The operational procedures as described in the Plan are as follows:

1. Problems to be dealt with by the Center will be determined by the Regional Governing Board.

2. Training and research programs will be organized to deal with problems identified by the Board. A research specialist with experience in systematic problem-solving will direct each research program, working with and through a regional team of selected trainees from member countries.

3. Trainees will undergo an initial orientation program, covering the systems approach and research methodology and providing familiarization with the general field of educational technology. Beyond this, the training will consist of actual participation in the research area or program to which the trainee is assigned. He will learn by doing, and he will help to produce a prototype solution to the problems comprising the subject of his research program.

4. The product of the research programs (proto-type solutions) will be taken by the trainees who helped to create them to their own countries upon completion of training for further trial, development, and refinement, and, finally, implementation at the national level.

5. There will be a national center in each country, providing a "home" for the returned trainees to carry out trials of prototype solutions and to work with further systematic problem-solving at the national level. The regional Center will maintain a close relationship with the national programs through follow-up, information services, and testing and evaluation. This is necessary to ensure professional support of the national programs and important feedback to the regional Center's programs.

6. It is anticipated that the long-term training programs will operate on a one-or two-year cycle. As one group of trainees leaves the Center, a new group will come in to staff the on-going research program and to receive training in the process of systematic problem-solving. There will also be supporting, short-term training programs.

The Plan outlines four distinct types of training programs to be offered at the start by the regional Center. The programs are to be evaluated during the early years and adapted as necessary as the program develops. These four programs include:

1. An intern training program focusing both on research and training. The concept of research fellows and resident staff working on prototype solutions to common problems is centered in this program.

2. An intensive training program (three months) for senior personnel involved in educational management.

3. Orientation to educational innovation and technology for top-level ministry officials (round-table discussion and training activities of from seven to ten days).

4. A series of short workshops stressing innovative aspects of such areas as curriculum development, educational planning, evaluation, statement of objectives, etc.

Priorities for research presented in the Five-Year Plan, based on recommendations which emerged from the national and regional seminars and subsequently approved by the Regional Governing Board, are as follows:

1. Curriculum development and reform.
2. Teacher training and development methods.
3. Evaluation.
4. Instructional media.

Illustrative projects described in the Plan, based on these priorities, are somewhat more exciting, including:

1. The development of a comprehensive inventory of specific educational aims, together with an appropriate set of measurable criteria of these aims.

2. The identification of distinct sub-groups of primary pupils who have separate educational needs, and the development of a model for optimum curricula for these pupils.

3. The assessment of cost effectiveness of instructional media and techniques under varying conditions.

In keeping with the described operational procedures, the research plans indicate that a research specialist will direct each of the proposed programs, and interdisciplinary team effort will be utilized. Interns and research team members from regional countries will be involved in all research projects. In this way, products of research will be taken back to member countries by the researchers themselves, for further trial and experimentation on the local level.

The Plan describes the function of the library and information services division as follows:

1. The establishment and maintenance of an up-to-date library on educational technology and related subjects.
2. The collection and dissemination of information on research, innovation, and educational developments within the SEAMEC region.
3. The publication of a newsletter and a bulletin or journal describing the activities and research results of the Center, as well as innovation outside the region.
4. The establishment of relationships with institutions and agencies outside the region with a view to keeping up-to-date on educational change and innovation in all parts of the world.

The project rationale and the conceptual framework of the INNOTECH Center are stated at the beginning of the Five-Year Plan. These statements have come to be known as the "INNOTECH Concepts" and they form very important background for understanding INNOTECH as a regional approach to the development of educational alternatives. This section of the Five-Year Plan is appended to this paper as Appendix B. If you seek a better understanding of what INNOTECH is all about, you should read this attachment.

INNOTECH is well into its second year of interim operations. It was not possible to set up the center in Saigon immediately, and through the generosity of the Government of Singapore a temporary site for interim operations was provided so that a start could be made. Under these circumstances no more than a partial test of the project plan and concepts can be expected from these months of

interim operations. Nonetheless, certain observations can be made based on the experience thus far. This experience includes almost two years of intern training with a group of eight the first year and a group of sixteen the second year; two three-month training programs (the second is only one month old as of this date); two seminars; and a number of research projects, most of which are still in progress.

Observations

1. Selection of Problems: The original concept of identifying common problems through the mechanism of the Regional Governing Board has not operated effectively. The priority research areas indicated in the Five-Year Plan for INNOTECH reflect the recommendations of a regional seminar which was convened to consider the data and information gathered from the eight national meetings during the project development period. They are of such general nature that they actually give INNOTECH a great deal of freedom and flexibility in choosing specific research activities or problems to solve, but this begs the question of identifying common problems. Furthermore, the priority areas listed in the plan could be pursued with a view toward making the present system work, or they could be designed so as to become steps in the replacement of the present system. So choice and selection still have to be exercised. Perhaps because the Center is in its pilot years -- interim operations -- the Governing Board has left INNOTECH with the responsibility of choosing specific problems to solve and specific research projects to undertake. As a result, the research and problem-solving activities undertaken have been influenced greatly by the limited size of the professional staff, and by the manageable targets of opportunity which presented themselves. Probably it is fair to say that the research and problem-solving activities carried out to date have been selected so as to be useful in carrying out the training activities, and the aim of producing prototype solutions that could be turned over to the member countries for further experimentation has been of secondary importance. Once the factor of expediency which normally characterizes pilot operations is eliminated, the process of problem identification (identifying common problems) needs attention, and the Governing Board needs to take a more active role.

2. Integrating training and research. One of the original INNOTECH concepts proposes that people will learn to be innovators at the regional Center by engaging in innovative activities: that is, the necessary skills, attitudes, and information would be obtained by actually working at problem-solving tasks as part of a research team under the direction of a resident specialist -- hopefully resulting in two products: (a) trained innovators, and (b) prototype systems or solutions. The experience of the Center to date throws some doubt on the validity of this concept. It has been found that the interns and trainees coming to the Center do not have the necessary qualifications for carrying on research, and that training them to the point where they can carry on creditable research, necessarily diverts time and energy from the research itself. As a result, one or the other, either research or training, is constantly being sacrificed. This situation could happen as the result of deficiency in the concept itself; i.e., it is possible that such integration of training and research simply will not work. On the other hand, the situation could also result from the fact that during its pilot phase, INNOTECH's programs were being developed from scratch -- programs which have no counterpart anywhere else to provide guidance -- and it can be expected that such factors as criteria for selecting interns and trainees, mechanisms for selecting research problems, determination of knowledge, skills, and attitudes necessary to become an innovator, and other related matters would need some trial and error. Additionally, a limited staff had to shoulder the responsibilities of both planning and implementing in getting these pilot programs under way. Probably it is a fair statement to say that the concept of integrating training and research has not had an adequate trial as yet. The particular circumstances of the months of interim operations to date have created serious difficulties in trying to implement this concept, and it needs further testing. It is quite possible that with more careful selection of common problems and focus on practical problems, with plans of action and research designs worked out in advance, with selection of interns and trainees to fit these plans and designs, and with a larger professional staff to share the training and research responsibilities, the concept will become more workable.

3. Development of national centers. The success of INNOTECH will depend in large part on the quality and the dynamism of the national centers. In each of the SEAMEO countries the Ministry of Education has designated the agency or unit which will serve as the INNOTECH National Center. Some of these are simply offices within the Ministry of Education; others are centers or units such as an audio-visual aids center, an instructional materials center, or

educational television service. All of these designated "homes" for the innovators at the national level do not meet the requirements indicated in the development plan for successful operation of a national center. In particular, few of the designated units meet the last stated requirement of having either as assigned functions or included in the scope of outreach such activities as research and evaluation, curriculum development, educational radio and television, audio-visual education, and other instructional media development. Since the strength of the INNOTECH program will depend basically upon the strength of the national centers, the development of these centers cannot be overlooked. The regional Center cannot be in a position of dictating or directing such development.

It is clearly stated in the Plan which was approved by SEAMEC that the national centers will be independent and operated entirely by the respective member countries. Nonetheless, if the member countries obtain maximum benefit from the INNOTECH program, planned efforts must be made to develop these centers into functional homes for innovators, all of which eventually meet the criteria established for their successful operation. The regional Center must give careful study to the process of national center development and must identify ways in which the programs and resources of the Center can both support and encourage national center development.

4. Immediate results versus long-range goals. The development of the INNOTECH Center was carried out through a process of involvement. This very process created expectations. With the establishment of the Center, even on an interim basis, there are pressures from popular expectations among the rank and file of Asian educators. All of this seems to call for immediate action; the Center must start producing some solutions. This is a practical matter which cannot be put aside. At the same time, everyone knows that educational change is a long-range task and it was recognized at the outset that a regional center could only support and encourage innovation and educational change which must take place at the national level. Training innovators to serve as change agents, preparing prototype solutions which need further trial and experimentation at the national level, providing information and other kinds of professional support are secondary tasks which prepare the national centers to do the primary task of changing national educational systems. Somewhere between these two -- immediate results and long-range benefits -- a Center posture must be worked out which will avoid serious compromise of the basic, more long-range purposes of the regional Center, but which will demonstrate the potential of innovation here and now. This is no easy task, but it is not an impossible one.

5. The systems approach. There is an aura of magic in the term "systems approach". In the development of INNOTECH as a regional project, this term was used liberally in describing the way INNOTECH planned to proceed in working out solutions to problems. This approach as used in engineering and industrial management and operations, or as applied to the planning and undertaking of a huge, complex task such as placing a man on the moon, is an extremely sophisticated approach involving computers and applied mathematics. Attempts are being made now to apply this approach at a sophisticated level to the planning and operation of educational systems. No applications in this sector have been made as yet which would completely satisfy the professional systems analysts. Actually, as presented to the INNOTECH planners by Dr. David Klaus in the early stages of the development of the project, something considerably less than computerized systems management and analysis was envisioned. The use of this term was intended to emphasize the importance and necessity of approaching problem-solving on a systematic basis -- carefully identifying purposes or objectives or clearly defining a problem, taking into account all of the variables which will affect solutions to problems or programs for achieving objectives (identifying constraints or listing specifications), selecting a promising solution, subjecting it to trial, and so on. When defined simply as a systematic way of solving problems, the systems approach becomes a manageable and teachable approach. When considered in its more complex and sophisticated definition and applications, it is probably too advanced for the present situation in the education sector of the nations of Southeast Asia. It is quite possible to get hung up on the complexities of the systems approach and thereby overlook its value in developing educational alternatives -- namely, the discipline it projects in trying to work out solutions to problems. This sounds more like a sermon than an observation regarding the INNOTECH experience of the past few months, but, in fact, there has been some confusion regarding both the value and use of the systems approach in carrying out the interim training and research activities of the Center. There needs to be some clarification as to just how far the INNOTECH programs should go with the systems approach.

(1) Dr. Sim Wong Keei has expressed this caution very wisely in his paper on INNOTECH Concepts available at the INNOTECH CENTER. See pp. 6 - 11 of that paper.

6. Prototype Systems. One of the ideas put forth in the 1967 paper was that it would be a mistake to import educational technology from other countries and try to use or adapt it to the Southeast Asian situation. The argument was that indigenous programs are needed -- programs that are peculiarly fitted to the Southeast Asian situation. I have been persuaded to change my mind on this point. The development of workable learning systems is so very costly that it is wise to avoid duplicating development costs wherever possible. Practical considerations now call for careful examination of all kinds of technology and systems developed in other situations to determine potential utility and to see if with inexpensive modifications acceptable solutions cannot be worked out with the borrowed systems. This observation is based more on worldwide development in educational technology during the past five years than it is on the INNOTECH experience during interim operations, but it is an observation which could and probably should have some influence on INNOTECH program planning for the immediate future. If the suggestion has validity, planned effort should be made to discover and bring to the Center for study and experimentation systems which have been developed elsewhere to solve problems similar to those being worked on at INNOTECH, and see if, at considerably less cost than developing completely new materials, refinements and adaptations could be worked out to become "prototype solutions" for use in Southeast Asia. And certainly one of the specific values of regional cooperation is the opportunity it provides for sharing information and sharing of systems and solutions worked out by any of the participating countries.

7. Implementation of educational change. Understandably, there is impatience at the regional Center when it is necessary to work somewhat removed from the cutting edge of innovation. It simply is not possible for a regional center to implement educational change. The adoption of new systems and new approaches, the actual implementation of innovations and alternatives are the responsibilities of national governments involved in regional cooperation. The regional Center and the professional endeavors carried on at the regional Center must play a supporting role. This understandable inclination for closer identification with implementation may in some ways affect development of prototype solutions. With actual implementation in mind, the researcher wants trial and refinement of a product to the point where he is satisfied that it will work. But if the intent is to develop products which will be taken by centers at the national level for further refinement and experimentation before the stage of actual implementation is reached, the degree of perfection required of

these products in the regional Center is considerably less. During these interim months of operation there has been some reluctance on the part of the Center to release items to the member countries simply because the research has not gone far enough. The regional Center must constantly discipline itself to hold to the supporting role, and, of course, the supporting role itself must constantly be evaluated and refined to be maximally effective.

8. INNOTECH staffing. It has not been possible to implement permanent staffing plans for INNOTECH during interim operations in a temporary location. Hence, the adequacy of those plans has not been tested. However, the experience to date does throw some light on what may be expected in the future. INNOTECH has had to innovate in getting its staff for the interim operations in Singapore. Part of the resident staff is from Vietnam, assigned by the Ministry of Education in Saigon; part is from Singapore; part from SEAMEO countries other than Vietnam and Singapore; and there are two American specialists from the American Institutes for Research. For the programs which have been attempted during the interim operations, the Center has been understaffed at the professional level. Handling intern training simultaneously with the implementation of a 3-month training program, together with on-going research programs, has over-taxed the interim staff of five professionals and the experience suggests that the full implementation of all of the training and research programs in a permanent location may require more people than projected in the Five-Year Plan at the professional level. The Center, with the assistance of SEAMEO, has attempted to recruit other specialists from outside the region under technical assistance arrangements with friendly governments, but those countries indicating willingness to help SEAMEO by supplying experts for the projects have found it difficult to recruit for INNOTECH for two reasons: (a) it is difficult to locate professional persons with the skills required by the INNOTECH programs; and (b) the uncertainty about when INNOTECH can move to Saigon has meant that recruiters cannot tell prospects for sure where they will be living and working. The projected plans of recruiting part of the professional staff from within the SEAMEO region may also fall short of expectations, based on experience to date, because educators in the SEAMEO countries who have the skills required by INNOTECH are very scarce (one reason why INNOTECH was established was to do something about this scarcity) and the few who can be found are badly needed in the national programs. So it may be necessary to develop new plans for more vigorous recruitment efforts outside the region for the early years of INNOTECH operations. There is considerable evidence that staffing of the Center will be a continuing, immediate problem as well as a long-range one, and more attention will need to be given to this problem.

These observations deal mainly with problems and issues which can be identified from the interim operations of INNOTECH, and it certainly would not be fair to overlook or pass by the plus side of the scoreboard. Even from interim operations things are beginning to happen:

1. Twenty-four interns have been or are being trained at the Center, eight of whom have gone back to their countries prepared to operate as change agents. Sixteen more will return to their home bases in June of this year.

2. Forty-eight educators have been or are currently being exposed to the process of innovation and the potential of new educational approaches in the intensive, three-month training program. These persons will also serve to some degree as change agents when they return to the SEAMEO countries, and they can be expected to give support to other local change agents.

3. Research efforts have resulted in products such as programmed materials for teaching the systems approach and the INNOTECH concepts, case study teacher-training materials, a pre-school readiness test, information sheets on innovative projects now going on in the SEAMEO region, materials (including tapes) for self study in improving command of English. Some of these items will be ready to release to member countries soon.

4. Seminars and special meetings have involved large numbers of Asian educators in discussions and deliberations regarding plans and procedures for bringing about educational change.

5. Among the most significant results of the INNOTECH activities to date are the interest, the talk, and the action they have generated in the SEAMEO member countries regarding innovation and the development of new approaches. It is the testimony of a senior educator in Indonesia, for example, that the current, very exciting national educational assessment and national educational planning programs in Indonesia, using the systems approach, came about as a result of Indonesian involvement in the plans and programs of INNOTECH. And in other SEAMEO countries not much could be heard about innovation and new approaches before INNOTECH started stirring things up with the national and regional seminars and with reports at SEAMEO meetings. One could make a random selection from the major educational speeches and written educational articles in the SEAMEO region during the past two years, and the chances are he will find some reference to the need for innovation and/or the need for new approaches. INNOTECH has generated some thinking and talking. And this is liable to lead to action, indeed has led to action in some of the countries.

So, though not completely tested as yet, there is enough evidence in the INNOTECH case to justify hope and expectation that an important part of the job of developing educational alternatives can be done through a regional approach to the benefit of the participants (cooperating countries), both in terms of economy and effectiveness. INNOTECH still has problems to solve, but it was created to solve problems. It is still new and there are no known institutional counterparts. Because of this, and because INNOTECH is daring to deal in an innovative way with educational issues which now plague countries around the world, a great deal of interest and attention is being focused on this particular SWAMEO project by agencies, institutions, and governments outside the Southeast Asia region. INNOTECH emerges as an instrumentality for successfully implementing a regional approach to the development of educational alternatives. Its full potential is yet to be determined.

Addendum A

THE POTENTIAL OF NEWER INSTRUCTIONAL MEDIA
FOR
EDUCATIONAL DEVELOPMENT IN THE COUNTRIES OF
SOUTHEAST ASIA

By Dr. Robert Jacobs, Regional Education
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Introduction

In recent years the Asian countries have given high priority to the expansion of facilities for education and training. They have recognized that all other developments -- in industry or agriculture, in politics or defense -- depend on the skilled manpower and the informed citizenry that only an adequate educational establishment can provide. They have committed themselves to the attainment of sufficiency in education in the shortest possible time. But, despite their most earnest efforts, the demand has continued to eclipse the progress that has been achieved.

The limiting factor has been the enormity of the task. There have been no solutions to the quantitative problems of providing basic education to the large percentage of children to whom this opportunity now is denied; of balancing this investment with the equally urgent needs for higher education and for technical education at all levels; and of finding still further resources to cope with such special problems as literacy training for some 350 million adults. Nor have there been solutions to the qualitative problems of replacing the traditional aims of education with revised objectives attuned to present day manpower needs and national development aims, and of maintaining high standards of education throughout the flux of expansion and change. Could they have been treated individually, any one of these problems would have posed a serious challenge. In the aggregate, they have proved overwhelming.

Looking ahead, the Ministries of Education have projected their needs and their resources, and have found that even long-range solutions are nowhere in sight. It is simply impossible to build the schools, train the teachers, print the textbooks, install the shops, equip the laboratories, and hire the administrators in the numbers required to meet the basic needs of all sectors of the

educational effort. The unhappy alternatives have seemed to be (1) to concentrate the available resources in certain sectors, perforce slighting the rest; or (2) to dilute the effort with partial programs in all sectors, thereby doing justice to none. Either way, the established targets for national development cannot be achieved.

Hypothesis

As startling as it may be, as unacceptable as it may be initially, a strong case can be made for the hypothesis that most of the "insurmountable" problems of Asian education are in fact self-imposed and, to that extent, artificial. They are problems only because we have assumed that Asia must follow the traditional approaches to education that were developed in past centuries. We have assumed that each of the developing countries in Asia must retrace the steps that the advanced countries traveled decades before. The problems are self-imposed simply because we have continued to insist on traditional classrooms with standard equipment, on the accepted ratio of a qualified teacher for each 35 students, on the bound textbooks that are costly to produce and difficult to keep up to date, on the instructional methods whereby one student performs while his classmates sit idle and passive, and on all the other outmoded features that the countries which are exporting educational expertise are trying to replace in their own educational programs. Take away the constraints of history and tradition, and the problems begin to disappear. Remove the self-imposed assumptions and certainly the nature of the basic problems will change considerably.

The reality of today is that breakthroughs have been achieved in the technology of teaching and learning which demonstrate quite clearly that there are infinitely better, more efficient, and more economical means of achieving instructional objectives than were available even ten years ago. There is no reason why Asian education should be tied to approaches which have been made the norm only by history and tradition. Systems and methods consistent with Asian resources and directed specifically to Asian needs can, should, and inevitably will be developed.

What are the implications of these breakthroughs for educational development in Southeast Asia? What would be the effect of tossing aside these age-old assumptions? Is it indeed necessary to have a teacher for every 30 - 35 pupils? Is it necessary to spend 6 - 8 years to achieve the instructional objectives which are set for the elementary cycle? Is it necessary to house the learning process in the expensive physical plants which are designed to serve the one teacher to every 30 - 35 pupils approach? These are not simply "just suppose" questions. They are questions which can be raised legitimately in view of the alternative approaches and solutions which are now above the horizon and which have never been tried seriously in Asia.

With exercise of just a bit of imagination, one can pass from questions about assumptions to a possible future where the objectives of basic education (literacy skills, basic computational skills, simple community living skills, and so on) are implemented and achieved right in the home and village by use of simple, inexpensive, self-instructional packets of materials, coordinated with radio broadcasts which come into either the home or perhaps a community center. No school as we know that institution today may be required. A completely new kind of institution may emerge replacing both the physical facilities and the concepts which now separate education into elementary and secondary cycles. These institutions of the future will possibly be community education centers for self-learning, where persons of all age groups will gather to utilize modern learning resources, largely self-instructional, requiring a minimum of professional supervision, and achieving what the educational system is expected to achieve at a fraction of the cost, at greater efficiency, and in considerably less time than the twelve years norm established by tradition for the elementary/secondary cycles. Vocational education may be carried out in special learning centers where basic knowledge and techniques are mastered through multi-media instructional devices, at a bare fraction of the cost of vocational education as it operates today, leaving the development of special job skills based on this general background as the responsibility of the business, industrial, or governmental organization employing these skills. One can try to set these imaginative wanderings aside as being the science fiction of educational technology, but it must be remembered that in the physical sciences we have seen in our generation the leap from the science fiction of yesterday to the space exploits of today.

The Task

I am not foolish enough to propose or to even imply that this kind of change can come quickly or easily. The roots of the educational establishment lie deep, and this is true in any culture -- within any national boundary. Educators are generally conservative and resistant to change. And there are vested interests lobbying for maintenance of the status-quo. One can see all of these forces at work in the countries now coming to grips with the newer educational technology. But in Asia the alternative to change is perpetuation of "insurmountable" problems, and eventually, quite possibly, educational bankruptcy. For the cost of traditional approaches grows greater each year, and resources for the national investment in education, unfortunately, do not increase proportionately. There simply must be willingness to try new approaches, and there must be serious exploration of the newer educational technology to see what it may have to offer. However difficult the achievement of change, a start has to be made.

It would be a mistake, and a serious mistake, to begin simply by importing teaching machines, programmed textbooks, educational TV, computers, and the other "gadgets" developed for use elsewhere and attempting to impose them upon an existing system of education. There are two things wrong with this approach. First, innovation must be indigenous, suited to Asian problems and needs, if it is to be effective; and second, imposing gadgets upon the existing system simply adds the cost of the new to the cost of the old. Educational television, for example, used as a supplement to traditional classroom instruction is a luxury few if any Asian countries can afford. But when used to make the skill of the master teacher available to fifty classrooms at a single performance, educational television may become an instrument for change while effecting genuine economies in the cost of education.

It would also be a mistake to start innovation by importing specialists from other countries to do the job for the Asians. Such expertise must be tapped for purpose of training and for dealing with specific problems, but innovation is not a oneshot affair; it is a continuous process, and to insure its continuity Asians themselves must be the innovators; not simply passive onlookers while the job is done for them by outsiders. Indeed, there is good reason to believe that once the situational prerequisites for innovation are established, the Asians may easily move into the forefront in the development and practical applications of educational technology, and themselves become the craftmaster specialists in this movement. The reason for

believing this is simply that there is in Asia a far more desperate and urgent need for more efficiency and greater economy in operating the educational establishment than there is in the more affluent societies where the pace can be slower and the conservative elements can be accommodated with more patience. Need breeds effort. Desperate need fosters great effort.

Prerequisites

How then can a start be made? What are the situational prerequisites for innovation in Asia whereby Asians can themselves work out Asian new approaches to the achievement of educational objectives? Among the basic requirements are the following:

1. Training for innovation - There must be in each country cadres of innovators and creative thinkers who can rid themselves of past assumptions and focus on the development of the most efficient and effective solutions to educational problems. The training experience should include thorough exposure to the state of the art of educational technology; such persons should know the techniques of programmed instruction, the advantages and limitations of teaching machines, the potential of the various mass media and of self-instructional devices. And they should be thoroughly versed in the methodology and techniques of educational research and experimentation.
2. Organizing for innovation - Administrative structures must be provided as "homes" for the trained innovators; i.e. centers, institutes, or agencies whereby the necessary administrative and fiscal support can be provided to backstop and encourage innovation. The Instructional Materials Centers may well become the institutional homes for the innovators.
3. Equipping for innovation - There must be adequate equipment and facilities for research, development, experimentation and demonstration.
4. Unrestricted experimentation - Situations for unrestricted experimentation must be provided; e.g., experimental schools where curriculum, methodology, instructional materials can be separated entirely from the set educational requirements, and departures from these requirements, however radical, can be tried with an open mind and without restriction.

5. Keeping informed - There must be ready access to current and up-to-date information about progress in educational technology as it is being developed in other cultural settings -- the latest research data, descriptions of models, current thinking, and so on.

6. Relating research to operation - There must be an inter-linking of research and operational education programs to permit the easy injection of new approaches into the mainstream of education practice once experimental models have proven their worth. Such inter-linking will also provide continuous feedback from operations to research.

7. Adequate measurement system - Objective means of measuring the attainment of educational objectives must be developed so that tangible progress can be clearly differentiated from mere change, and so that savings in time and money can be evaluated in terms of loss or gain of educational quality.

The establishment of these prerequisites is a developmental effort of considerable proportions. However, to look ahead realistically to the coming changes in education and to reflect seriously upon the impossibility of keeping up with educational demands through traditional approaches, is to recognize that the size of the task must not dissuade making a beginning. As a developmental effort, it almost certainly affords a higher benefit to cost ratio than any other investment that might be projected for long-range educational growth.

Because of the nature of this developmental effort it may lend itself easily to a regional approach. And since one of the purposes of this workshop is to consider the desirability and feasibility of a regional program in instructional materials, let me attempt to outline a possible program which you may wish to consider along with other proposals for regional work.

Plan

The situational prerequisites for innovation could be brought into existence by centralizing certain portions of the task in a regional center which might be called the Southeast Asian Center for Educational Technology. Other portions of the total task could be carried out through national centers which would maintain sister relationships with the regional center.

The primary functions of the Center would be the training of specialists to staff the national centers, and the development of prototype educational systems of potential utility throughout the region. The functions of the national centers would be the adaptation of the centrally-developed prototypes to fit local conditions, and the installation of the new systems in local institutions. Responsibility for research, evaluation, and continuing improvement would be shared and carried out through cooperative projects encompassing all centers.

The organization of the regional center could be in terms of Research Programs or Divisions, one for each of the major areas to be studied (e.g., 1 - basic education, 2 - technical training, 3 - adult education, 4 - language instruction, etc.). The staffs of these divisions would be made up of resident specialists and research fellows (trainees) selected from the member countries. Each fellow would work at the regional center for a period of two years, spending six months in familiarization training, and eighteen months on productive research as a member of a multi-national team devising prototype systems for the particular research area to which he is assigned and for purposes of continued training, working under the continued guidance and supervision of the resident specialist in charge of the particular area. At the end of two years he would return to his own country to work in the national center on the adaptation and installation of the procedures he had earlier helped to develop. As trainees leave the regional center, new groups would come in, thus maintaining the strength of the central facility, while building up the expertise of the national centers.

This rotational staffing pattern would insure maximum use of the facilities and resources, since research and training would proceed concurrently, all within the context of solving practical problems. And, having the national centers staffed by specialists who are trained at the regional facility would provide the continuity and automatic feedback essential to the interweaving of basic research and practical application that is desired.

At the regional center, there could also be a number of specialized technical resource units to serve the needs of the research programs. These support units would backstop the research programs in such areas as instrumentation and engineering, mass media, programmed instruction, and measurement and evaluation. The measurement unit would play an especially important role in helping the research staff to design procedures for evaluating the effectiveness of new ideas vis-à-vis specific instructional objectives. They would be staffed with specialists and would be adequately equipped with instruments of modern technology to provide a wide range of experimentation and research.

The national centers would be organized similarly, although their professional staffs would be built up more gradually as the rotational training program proceeds. At some point, the regional facility would outlive its developmental utility, and become a center for coordinating and sharing research, to maintain the close international professional ties that will have been developed.

Such a program could bring into being an environment in which innovation can flourish. By focusing the genius and energy of the Asian educator on the development of the most efficient means of achieving educational objectives, and by giving him the support he needs to be productive, it is possible to remove the adjective "insurmountable" from the problems which now seem to be that way. It is possible to leapfrog by decades the development of a discipline that has for centuries been characterized by too little for too few too late. The task is not an easy one, but a beginning has to be made. And the time to begin is today.

Addendum B

PROJECT RATIONALE AND CONCEPTUAL FRAMEWORK

A. Hypotheses on which the project is based:

1. In view of the mounting costs of education as it is now carried out, the expanding youth population in Southeast Asia, and the phenomenal increase in knowledge, added to the fact that for the region as a whole, less than half of the youth of school age are actually in school, conventional approaches to education are no longer capable of solving the basic educational problems of providing adequate educational opportunity to all school-age youth in Southeast Asia.
2. More effective approaches (innovation) are needed and Asian education and Asian educational systems must be prepared to create, borrow and modify, experiment with, and finally implement more effective approaches.
3. More effective approaches (either new approaches or re-shaped old approaches) can be developed by clearly identifying problems to be solved or aims to be achieved and then working out the most effective solutions or approaches within the constraints of the situation, but without the restraint of fixed assumptions brought on by how things have been done in the past. The systems approach must be applied to educational problem solving if the complex tasks and burdens now placed on Asian education and educational systems are to be handled effectively.
4. The changes which must be made to deal realistically with the situation as described call for vigorous, adequately supported national programs, but a regional center can play a vital role by training specialists, orienting educational planners and administrators to the potential of the systems approach and the newer educational media, developing prototype solutions to educational problems, and by providing professional support to national programs through follow-up of trainees, dissemination of information, consulting services, and joint research and evaluation.

B. The INNOTECH Concept:

1. Since the project title may tend to focus unduly on innovation, it is important to point out initially as one element in the INNOTECH concept that the stress is on effectiveness and workability in working out solutions to educational problems. In other words, as problems are identified, clearly defined, and actions are initiated to solve them, effectiveness and workability of solution, in terms of the specifications which are set for a satisfactory solution, will be the keynote regardless of whether it is a new and unconventional solution or simply a restructuring of a long-practiced solution.
2. The work of the project is to be problem oriented.
This is one of the most important elements in the INNOTECH concept. Work with educational television, teaching machines, programmed instruction, and so on (if there is any such work) will be in relationship to identified problems and the possibilities presented by these media in deciding the most effective solutions to these problems. Educational television, programmed textbooks, and self-instructional devices will not be developed as separate solutions after which there would be a search to find problems which those solutions might fit. To repeat, the work of the project will be problem oriented.
3. Although a regional center can play an important and effective role in effecting educational change and improvement, these eventual goals can never be realized unless there are strong national programs dedicated to the INNOTECH concept. The relative roles of the regional and national centers are spelled out on pages 11-14. But in dealing with the total INNOTECH concept, it is necessary to mention this element of placing primary responsibility for implementation of educational change and improvement on national centers and national programs.
4. Finally, a basic element in the INNOTECH concept is the integration of training and research. This will lead to two products: (1) key educators knowledgeable with regard to the use of the systems approach in education, with regard to research methodology, and with regard to operative educational technology; and willing to discard the sacredness of conventions; and (2) prototype solutions to educational problems developed by these key educators, ready for trial, further experimentation and eventually implementation in the national programs.

SUMMARY OF DISCUSSION

The discussion centered primarily on Innotech's function as a Regional Center. The following activities were suggested for Innotech:

1. Disseminate information about Innotech and the ways it would serve member countries.
2. Establish functioning National Centers.
3. Rather than prototype solutions, provide a bank of alternatives from which member countries might choose those adapted to local needs.
4. Accept specific problems from member countries for development of solutions.
5. Establish a clearing house for innovations from the region and elsewhere.

Answers from Dr. Jacobs and other discussants made the following points:

1. That Innotech is disseminating information about itself through national and regional seminars and through the activities of returned participants.
2. That solutions to local problems are being achieved by INNOTECH participants after their return home.
3. That as prototypes developed by INNOTECH accumulate they will form a "bank" of alternatives.
4. That INNOTECH, through its Project Clear, is in process of providing a clearing house of innovations from the region and elsewhere.
5. That the SEAMEO Planning Seminar and SEAMEO's contribution to the 1971 Commonwealth Education conference provide evidence of the value of regional cooperation through regional centers.