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**TECHNICAL  
ADVISORY  
SERVICES**

to **INNOTECH**

**SEAMEO REGIONAL CENTER  
FOR EDUCATIONAL  
INNOVATION AND TECHNOLOGY**



**FINAL  
REPORT  
1970 • 1975**

FINAL REPORT

Technical Advisory Services to INNOTECH

SEAMEO Regional Center for Educational  
Innovation and Technology

to the  
Agency for International Development  
Contract AID 490-7

by the  
American Institutes for Research  
3301 New Mexico Avenue, N.W.  
Washington, D.C. 20016

Daryl G. Nichols

June 1975

## FUNCTIONS OF INNOTECH

- ... Create and develop new approaches to education - approaches which are particularly suited to Southeast Asia - deriving ideas from all possible sources;
- ... Supply a broad range of facilities and professional resources, and provide an environment where selection, development, and testing of potentially valuable innovations can take place;
- ... Attract to the Center outstanding creative thinkers and innovators who will assist with research and experimentation in new educational systems and instructional media;
- ... Promote and undertake research and experimentation, dealing with common problems identified within the region, leading to the creation of prototype solutions which can be tested and adapted in the member countries;
- ... Train selected, key personnel from member countries through training courses, workshops and seminars;
- ... Provide library and information services: collection, classification, screening and abstracting information and data relating to educational innovation and technology from world-wide sources, and dissemination to Ministries, agencies, institutions, and individuals within the SEAMEO region;
- ... Establish model testing and evaluation procedures and standards; and
- ... Coordinate activities with the member countries' national centers and programs, with related SEAMEO projects and with projects of other agencies.

## PREFACE

This report summarizes the progress at INNOTECH from July 1970 through June 1975. It was during this period that we at AIR have had the good fortune to be associated with INNOTECH, to observe its responsiveness to the educational needs of the Southeast Asian region and to witness the growth of its international reputation.

Although this report should reflect solely the progress of the AIR contract teams, it cannot do so because the work of AIR is inseparable from the work of the total INNOTECH staff. We at AIR have considered it a rare privilege to have shared in the development of an institution which is making a profound impact on education in Southeast Asia.

Daryl G. Nichols

## IN DEDICATION

INNOTECH was begun in 1969 in Bangkok, was hosted by the Government of Singapore from 1970 to 1973 and was transferred to Saigon in July 1973. A five-year operational plan was approved, and construction of a permanent site was begun. These activities ceased abruptly on 30 April 1975 when more than a quarter century of conflict ended for Vietnam with the surrender of Saigon. INNOTECH moved temporarily to Bangkok and is now making plans for a further move to another SEAMEO country.

But the move of INNOTECH from Saigon was little more than the move of an idea and the faith of the Southeast Asian countries in that idea which allowed all essential research and training programs to continue. All equipment and materials were left in Vietnam and only ten of the Center's seventy staff members left Saigon with the Center. It is to Mr. Pham Van Cung, Director of INNOTECH, and to his Vietnamese staff who remained behind that this progress report is dedicated. INNOTECH was their Center.

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## SCOPE OF WORK

Contract 490-7 became effective on 15 June 1970 and was completed on 30 June 1975. During this five-year period, the American Institutes for Research provided the services of resident specialists at the SEAMEO INNOTECH Center with appropriate home office and field support. (AIR specialists and their periods of service are given in the staffing section of this report.)

Specific duties under the contract to assist the Director of INNOTECH included the following:<sup>1</sup>

- ... the application of the systems approach to problem solving in education;
- ... design of developmental and evaluative research projects;
- ... design and supervision of an intern training program;
- ... technical guidance and supervision of specific research projects;
- ... assistance in professional development of counterpart research personnel;
- ... organization and teaching of appropriate training courses;
- ... assistance to the INNOTECH Director in the design of evaluation procedures for the Center's program and activities;
- ... provision of guidance to national programs of member countries;
- ... assistance in library development and selection of training aids, materials and equipment;
- ... assistance in the formulation of modular training packages;
- ... conduct a comprehensive review of Project IMPACT.

The activities and progress described in the remainder of this report reflect the technical support provided the INNOTECH Center through Contract No. AID 490-7.

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<sup>1</sup>Derived from the basic contract document and amendments.

## STAFFING

AIR has provided the services of six professionals at INNOTECH in addition to supervisory support in the way of backstopping and periodic planning and evaluation visits. The six advisors and their periods of service are shown on the following page.

Air advisors here included Dr. John C. Flanagan, Dr. Paul A. Schwarz, Dr. Robert E. Krug, Dr. Vincent H. Campbell, Mr. Harris Shettel, and Dr. David Klaus.

Ly Chanh Duc directed INNOTECH from 1969 to 1974 when he was replaced by Pham Van Cung. Winarno Surakhmad was Deputy Director (1973-1975). Mr. Orlando B. Claveria has been with the Center since 1973 and has served as Officer-in-Charge from May 1975 to the present. Regional professional staff members have been as follows:

Miss Greta C. Librata (Indonesia) 1969-1973  
Dr. A. S. Munandar (Indonesia) 1970-1971  
Dr. Pedro Orata (Philippines) 1971 as visiting scholar  
Mrs. Utami Munandar (Indonesia) 1971  
Dr. Frine Jimenez (Philippines) 1971  
Dr. Sim Wong Kooi (Malaysia) 1971  
Mr. Ong Teong Wan (Singapore) 1971-1972  
Mr. Truong Dinh Vinh Lan (Vietnam) 1970-1972  
Drs. Anwar Jasin (Indonesia) 1972-1973  
Dr. Aurelio A. Tiro (Philippines) 1972-1973  
Dr. Duong Thieu Tong (Vietnam) 1972-1973  
Mr. Chiam Tah Wen (Malaysia) 1972-1973  
Miss Le Thi Kim Hai (Vietnam) 1971-1973  
Mrs. Constance Peck (Singapore) 1972-1973  
Mr. Cecil Rasanayagam (Singapore) 1972-1974  
Dr. Fabiana C. Gloria (Philippines) 1973-1974  
Miss Do Ngoc Lien (Vietnam) 1973-1975  
Mrs. Sunan Patamachone (Thailand) 1973-1974  
Mrs. Nguyen Ngoc Chau (Vietnam) 1974-1975  
Miss Nguyen Thanh Hung (Vietnam) 1974-1975  
Dr. A. O. B. Situmorang (Indonesia) 1974-1975  
Dr. Nguyen Van Thuy (Vietnam) 1973-1974  
Mr. Tran Huu Long (Vietnam) 1974-1975  
Drs. Mohammah Domin Taboer (Indonesia) 1974-1975  
Miss Tran Thi Khue (Vietnam) 1974-1975  
Mr. Le Thanh Viet (Vietnam) 1974-1975  
Mr. Hoang Thach Thiet (Vietnam) 1974-1975  
Mrs. Dao Kim Phung (Vietnam) 1974-1975  
Mr. By Bouen (Khmer Republic) 1973-present  
Miss Noulchant Potar (Thailand) 1973-present  
Mr. Ouy Van Than (Khmer Republic) 1973-present  
Mrs. Plookpleum Sriprasert (Thailand) 1973-present  
Mr. Orlando Benozza (Philippines) 1974-present

PERIODS OF SERVICE FOR CONTRACT PERSONNEL

		Y E A R					
		1 9 7 0	1 9 7 1	1 9 7 2	1 9 7 3	1 9 7 4	1 9 7 5
JERRY SHORT		████████████████████					
DONALD P. HORST		██					
DOUGLAS G. ELLSON			██				
MICHAEL B. NATHENSON				██			
SHELDON SOFER					██		
DARYL G. NICHOLS				██			
MAN-MONTHS		20.61	22.76	35.77	34.89	16.55	

Miss Bibiana Corcoro (Philippines) 1974-present  
Miss Nguyen Thi Throng (Vietnam) 1974-1975

INNOTECH staff at research field sites:

Dr. Concisa M. Baduel (Philippines) 1973-1974  
Dr. Rosetta Mante (Philippines) 1973-present  
Drs. Boorham Respati (Indonesia) 1973-present  
Drs. Saleh Muntasir (Indonesia) 1974-present

Administrative Officers have been:

Mr. Norman De Souza (Singapore) 1970-1973  
Miss Duong Van Quyen (Vietnam) 1973-1974  
Mrs. Bui Thi Lam (Vietnam) 1974-1975

The Center has had three librarians:

Miss Mary Windt (Singapore) 1970-1972  
Mr. George Teoh (Burma) 1972-1974  
Miss Le Thu Nguyet (Vietnam) 1974-1975

Advisors and consultants have included.

Mr. Kenneth Bale (United Kingdom) 1970  
Mr. Geoffrey Wilson (United Kingdom) 1971  
Mr. Frank C. Gillis (Canada) 1972-1974  
Miss J. F. B. Tuck (Canada) 1973-1975  
Mrs. Valerie Saarelo (Canada) 1974-1975

## RESEARCH

The following projects have been completed or are now in progress.

Project PROGRESS: Primary School Readiness Testing - Feasibility Study
--

Purposes: (1) Determine the feasibility of conducting regional testing programmes, including:

- a) Test taking skills: What kinds of tests are appropriate for children in the region? Can paper and pencil tests be used for mass testing programmes? Would the difficulty of responding to such tests make them inappropriate instruments for determining whether or not the children had actually mastered the concepts INNOTECH wished to test?
- b) Language: What difficulty could INNOTECH expect in conducting large scale regional testing programmes? What would be required in order for INNOTECH to produce accurate translations of tests originally developed in a single language? How would language differences affect the administration and results of tests?
- c) Logistics: What kinds of problems could INNOTECH expect in travelling to the member countries? What kinds of difficulties would arise in making arrangements with the various educational organizations whose cooperation is needed for such a project?
- d) Trainees as staff: Would it be feasible to use short-term programme participants to carry out test-development projects?

(2) Development of reading and mathematics readiness tests.

### Summary Description:

Programme participants prepared the majority of materials for this project, assisted by the INNOTECH staff. Advanced training was provided on learning hierarchies, preparation of behavioral objectives and criterion referenced testing.

Two readiness tests were prepared, mathematics and reading, and were designed as criterion-referenced measures of a pre-determined hierarchy of

objectives for school readiness. The mathematics test was language-free since it contained no words. The reading test, however, was made in eight languages.

Each test contained three sections. Section A contained the specific set of behavioral objectives which the test items were intended to measure. Section B consisted of the teacher's materials for administering the test, including translations from the English version into member-country languages. Section C consisted of the test booklets to be used by pupils as answer sheets. All tests were designed to be administered by local teachers. (Sample sheets from the two texts are given on the next two pages.)

Tests were administered during a three-week study tour by training participants to member countries. No attempts were made to sample schools systematically since the main purpose was determining the feasibility of the approach. Although the tests were designed for pre-schoolers ("readiness") practical considerations dictated that the study be carried out with first year students.

Two excerpts from participants' diaries illustrate some of the difficulties in testing in local situations by local teachers:

"When I was told that there were seventy-four in the class, I knew that conditions for testing were not conducive. At a quick glance I noticed that five children were sitting at one desk of about five feet long. There were so crammed -- sitting shoulder to shoulder.

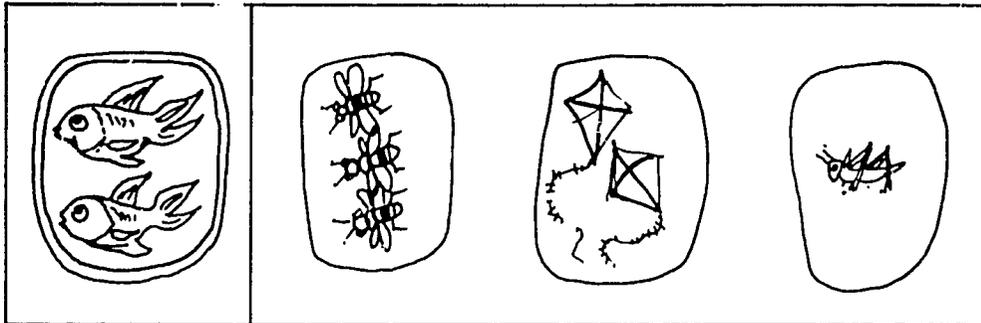
I made a quick decision. I gave the booklets to only the pupils sitting at both ends of each table. This therefore solved the problem of children looking into one another's booklet. The children in between acted as barriers. I know that I was taking the risk of distraction that might be caused by these children in between. However, the rural children were so polite that they looked on without making any noise. They have had so few opportunities that just looking on and being given the chance to side-glance at the pictures in the booklets kept them absorbed."

"At Item No. 6, I noticed that nearly all the children made a mark on the biggest dog. It should have been the smallest. I went up to the teacher and asked if she had asked for 'big' or 'small.' She understood me and replied that she asked for 'big.' I asked the interpreter to tell her to instruct the children to clean off their marks for Item 6."

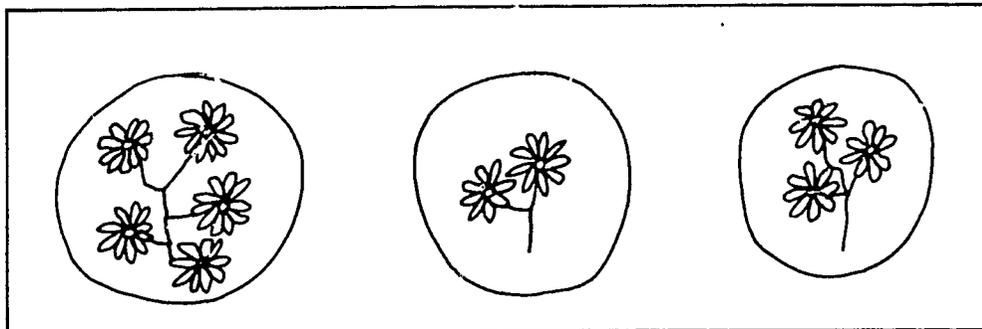
#### Progress:

This project has been completed, and a final report has been disseminated to member countries.

Sample Items from Mathematics Readiness Test

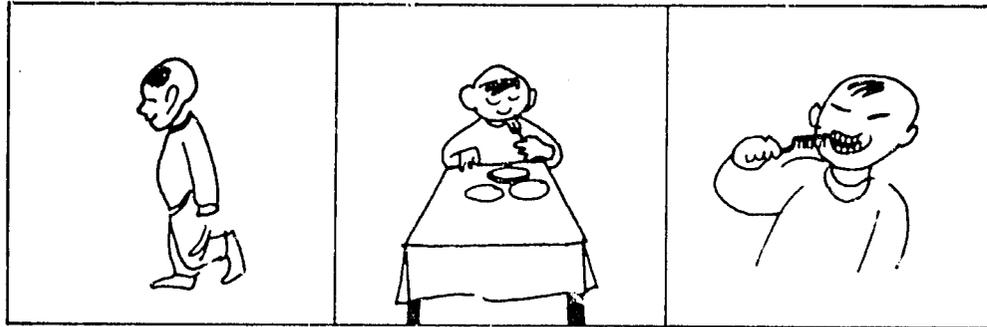


Student is requested to "Make a check mark on the picture that has the same number of objects as the first picture."



Student is asked to "Make a check mark on the picture that has the largest number of flowers."

Sample Items from Reading Readiness Test



Student is asked to "Make a check mark on the picture of the boy that is walking."



Student is asked to "Make a check mark on the picture of the girl who is writing."

Horst, Donald P. Primary school readiness testing: Feasibility study.  
Singapore: SEAMEO INNOTECH Center, September 1972 (Innotech/PP-1/7).

Summary of project results:

1. Regional testing projects are entirely feasible provided adequate resources and training time are available.
2. For research training projects, INNOTECH would be well-advised to use a relatively small and experienced staff with a fairly flexible time schedule.
3. Project staff members who are to construct and administer tests must have more experience and training than can be realized in a three-month programme.
4. The use of untrained teachers as test administrators is unsound. When language in an area precludes the use of INNOTECH staff for test administration, adequate time for on-site training of local test administrators must be scheduled.
5. Instructions and scripts for test administrators must be subjected to a series of tryouts and revisions before being used in the field.
6. Paper and pencil tests can be given satisfactorily to children in the first year of primary school. (Note that separate answer sheets were not used in this study.)
7. If item formats do not remain constant throughout a test, time should be given before each new format to instruct children through additional samples and practice.
8. Tryout and revision of procedures in each geographical area should precede data collection.
9. The distinction between diagnostic and predictive testing must be clearly drawn. The distinction must begin with a thorough examination and critique of objectives, and it must be followed by the development of test items designed to measure each objective.

Evaluation:

The study was a useful training experience for the participants who learned at first hand some of the problems encountered in developing testing programmes. But the research effort had to be scaled down to meet the needs of training and the abilities of training participants. In the future, we intend to make a clear distinction between training projects and professional research projects.

**Project Progress: Primary Objectives of Primary Education  
- Perceptions and Expectations**

Purposes: (1) Determine the feasibility of several data collection approaches for deriving objectives:

... interviews vs questionnaires,  
... open-ended-followed-by-structured questions  
vs structured-followed-by-open-ended.

(2) Derive tentative perceptions and expectations concerning objectives as derived from four types of respondents:

... pupils,  
... parents,  
... teachers,  
... heads of schools,  
... senior educators.

Summary Description:

Data from an area of Malaysia was to be collected using the different data collection approaches (1, above). The number of respondents in the sample: 300 pupils, 250 parents, 150 teachers, 20 principals and a mixed group of senior educators.

One example of an item on which data were to be collected concerns the relative importance different types of respondents place on various "reasons" for primary education, namely:

- A. for continuing secondary education
- B. for citizenship
- C. for future occupations
- D. for leisure activities
- E. for social transactions and interactions.

Analyses of responses to items such as these will involve statistical comparisons among certain stratifications such as rural or urban, primary or secondary, medium of schools, sex, ethnicity and social class.

Progress:

This project was under the direction of Dr. Sim Wong Kooi, Senior Lecturer at the University of Malaysia. Dr. Sim left the staff of INNOTECH at the end of June 1972. Because of the press of other activities (including an assignment overseas), he has been unable to complete the writing of the final report.

Evaluation:

None can be made at this time.

Project ACTION: Critical Classroom Behaviors of Teachers
--

- Purposes:
- (1) Develop prototype training materials to prepare teachers to meet problem situations in the classroom.
  - (2) Provide training to INNOTECH interns and participants in large-scale data collection and analysis techniques.
  - (3) Determine whether descriptive data could be collected in local languages of member countries and used successfully by a regional center (INNOTECH).

Rationale:

In order to prepare training materials which focus on actual classroom problem situations and on appropriate teacher behavior in facing these problems, it is necessary to tap the experiences of practicing teachers. Because of the need to identify appropriate and inappropriate teacher behaviors in problem situations as a basis for instructing new teachers, the "critical incident" technique was to be employed. This technique allows the collection of a large number of descriptions of actual classroom problem situations and the identification of effective and ineffective teacher behaviors in response to the situations. An "effective behavior" is one which leads to an especially beneficial result, whereas an ineffective behavior usually leads to a worsening of the problem.

Learning of appropriate classroom teaching behaviors requires more than simple cognition of effective and ineffective responses to problem situations. Such learning requires practice in a variety of situations. Case studies and role-playing techniques can provide this necessary practice.

Summary Description:

Following local tryouts in Singapore and Johore Bahru, Malaysia, the project staff (including trainees) were divided into two groups for data collection in SEAMEO countries. From a representative sample of schools in each country critical incidents were collected from practicing teachers. A total of 1281 incidents from secondary schools and 484 from primary schools were thus collected.

After translation of all incidents into English, they were classified by a three-step procedure. The first classification was by "situation," the second way by "teacher action," and the third was by "consequence." A sample of one incident is shown below.

(Situation)

One bright pupil who had finished his work tried to play with another pupil who had not finished his work.

(Teacher Action)

The teacher gave more work to the bright pupil and advised the one who had not finished his work to pay more attention to it so that he could finish.

(Consequence)

Both pupils were occupied.

From the incidents thus classified, two types of prototype training materials were prepared: case studies and role-playing situations.

In "case studies," classroom problems and teacher behaviors are presented. Teacher training students are to be asked what they would do if they were the teacher. Discussions are to follow in an attempt to find alternative solutions to a single problem, to prevent fixations on single solutions and to distinguish between effective and ineffective teacher responses to the problem.

In "role-playing," a problem situation is simulated with various students playing different roles. The person playing the role of a "teacher" will thus gain experience in dealing with real-life situations. In learning by the role-playing experience, he is guided by the effective and ineffective behaviors described in the previously classified critical incidents.

Progress:

Project ACTION has been completed. Results and prototype training materials have been disseminated throughout the SEAMEO region in two volumes:

Munandar, A. S. Critical classroom behaviors of teachers. Singapore: SEAMEO INNOTECH Center, August 1972 (Innotech/PAL/ Vol. I/1/7).

Munandar, A. S. Teacher training in critical classroom behaviors. Singapore: SEAMEO INNOTECH Center, August 1972 (Innotech/PAL/Vol. II/1/7).

Evaluation:

Although classroom problem situations occur in all countries, they do not represent the type of critical regional problem upon which we intend to

focus in the future. The incidents, their classification and the resultant training procedures should be valuable prototypes for adaptation to the needs of teacher training institutions. When adapted, however, it will be necessary to develop an evaluation form (such as a checklist) based upon the critical incidents which would be used to give feedback and direction to trainees during case studies and role playing.

TECH Programme for English Listening Comprehension
--

- Purposes:
- (1) Develop a self-instructional programme to improve the English listening proficiency of INNOTECH trainees in their own countries before they join the INNOTECH training programme.
  - (2) Prepare instructions for adaptation of the programme to meet the needs of other SEAMEO centers...essentially a prototype package to be adapted to the unique technical language needs of SEAMEO centers.

Summary Description:

- (1) Fifty units of instruction are to be prepared with the following characteristics:
  - (a) The subject of each unit is related directly to the content of INNOTECH's training programme.
  - (b) Each unit of approximately three minutes is recorded on cassette tape for self-instruction.
  - (c) Each unit is supplemented with
    - ... open-ended self-evaluation questions,
    - ... multiple-choice self-evaluation questions,
    - ... answer keys to all questions,
    - ... printed text identical to the content on cassette tape.
- (2) Sequence of instruction is as follows:
  - (a) Listen to three-minute tape using ear phone
  - (b) Answer open-ended questions
  - (c) Re-listen to tape and correct answers
  - (d) Compare own answers to answer key
    - ... if 80% correct, stop unit and progress to next unit,
    - ... if less than 80% correct, continue with present unit.

- (e) Answer multiple-choice questions
- (f) Compare own answers to answer key
  - ... if 80% correct, stop unit
  - ... if less than 80% correct, continue unit
- (g) Re-listen to tape and read text as much as necessary to locate answers in the text (by line number) for all questions previously missed.

(Total time per unit: 12 - 60 minutes)

- (3) Six copies of the complete programme are to be sent to each SEAMEO country so that candidates who are to attend INNOTECH training programmes can have at least two months in advance of training to improve their listening proficiency. For persons whose English is good, 10 hours of use will be sufficient. For those with less proficiency, up to 50 hours will be required.
- (4) The operational programme and instructions for adapting it to other technical areas will be made available to other SEAMEO centers on request. Some of INNOTECH content may be appropriate to some centers, but the majority will have to be rewritten and re-recorded to include the technical content of other centers. Recommendations will include:
  - ... methods for selecting and modifying excerpts from technical materials so that they will present cohesive ideas in approximately 500 words (three minutes on cassettes),
  - ... format, methods and cautions in preparing self-evaluation questions,
  - ... methods for tryout and revision.

#### Progress:

The TECH project is completed. A final report, the instructional programme ("The TECH Book") and cassette tapes were reproduced and sent in six copies to each of the eight member countries. Most of the present training programme participants completed the programme before arriving in Saigon although a number continue to use it here in their spare time.

#### Reports:

Ellson, D. G., Chiam, T. W., and L. T. Kim Hai. The TECH Programme: A self-instructional programme for English listening comprehension - final report. Singapore: INNOTECH, May 1973 (INNOTECH/TP-FR/73).

Ellson, D. G., Chiam, T. W., and L. T. Kim Hai. The TECH Programme: A self-instructional programme for English listening comprehension - the TECH book. Singapore: INNOTECH May 1973 (INNOTECH/TPM/73).

Programmed Teaching

Purposes: Attempt to develop alternative methods for effective and economical delivery of mass primary education.

- ... Develop and try out a model which does not require the use of qualified teachers and which will be effective in producing learning.
- ... Test the feasibility of using programmed teaching to enable elementary school graduates from a rural Asian community to teach effectively.
- ... Obtain a measure of the effectiveness of their teaching.

Rationale:

In the developing countries of Asia, even more than elsewhere, there is an urgent need to improve the cost-effectiveness of education, either by decreasing costs or holding costs constant while increasing effectiveness.

The prime component of cost in education is teachers' salaries (70-90% of educational budgets). Effectiveness means teaching effectiveness. It follows that the most promising focus for improvement in the cost-effectiveness of education is in the area of teaching.

Recent research in developed countries has demonstrated that a new technology, programmed teaching, may be able to increase the effectiveness of teaching. Trained and guided by this technique, non-professionals teach as well as professionals, and for meeting some teaching objectives, the programmed non-professional is from two to fifteen times as effective as the conventionally trained professional. It follows that a promising area for research aimed at improving the cost-effectiveness of education is investigation of the feasibility of programmed teaching in Asia.

Summary Description:

One hundred first grade children in a rural Malaysian community were taught beginning reading of Bahasa Malaysia by local elementary school graduates trained in programmed teaching. Two questions are being asked: first, is it feasible to use programmed teaching to train elementary school graduates from a rural Asian community to teach effectively? Second, how effectively can they teach?

Progress:

A three-month study was completed in ten rural elementary schools in southern Malaysia. A first report of the results has been reproduced and distributed:

Ellson, D. G., Chiam, T. W., Le Thi Kim Hai, Ishak b. Khamis, Khamis b. Noyo, and Moua Lia. Programmed teaching: Effective teaching by "Unqualified Teachers." Singapore, INNOTECH, June 1973 (INNOTECH/PT(E)-FT/73).

Reports also have been prepared in the Malaysian and Lao languages.

Evaluation:

Students in the experimental group (N=100) were matched with students in a control group who received the same amount of instruction but by traditional methods. Results indicated a significant difference in post-test scores in favor of the experimental programmed teaching group. Programmed teaching, thus, has become a potentially valuable means for economical and effective delivery of primary education. This technique is now being applied as part of INNOTECH's mass primary education research titled Project IMPACT. Older age primary students are acting as programmed teachers for beginners.

Development and Tryout of a Model for Deriving  
Life-Skills Objectives of Primary Education

Purpose: Develop a model for deriving the important objectives of primary education which would apply to children for whom primary school is terminal.

Summary Description:

Five alternative models were to be developed and tried in the Philippines by May of 1973. Approximately 500 community members on Cebu Island participated. The five models are given below as a series of steps.

Alternative #1

Steps

- ... Generate lists of "the most important things that primary age children should learn." (Committee A).
- ... Determine which primary objectives can be or should be learned in formal school as opposed to the use of other community resources for learning. (Committee E).

Analysis: Compare results with those of other alternatives on the basis of (1) feasibility, (2) acceptability, (3) comprehensiveness and (4) validity. (Staff)

- ... Review results of study (Steering Committee)

Alternative #2

Steps

- ... Generate behavioral examples of primary education achievements for generalized categories of objectives previously prepared. (Committee B)

Combine and categorize results. (Staff)

- ... Determine the twenty "best" examples for each generalized category. (Select Committee B)

- ... Judge the relative importance of objectives as important things to be learned by children who must leave school after 4-5 years. (Committee G)

- ... Determine which primary objectives can be or should be learned in formal school as opposed to the use of other community resources for learning. (Committee E)

Analysis: Compare results with those of other alternatives on the basis of (1) feasibility, (2) acceptability, (3) comprehensiveness and (4) validity. (Staff)

- ... Review results of study. (Steering Committee)

Alternative #3

Steps

- ... Generate behavioral examples of primary education achievements for generalized categories of objectives previously prepared. (Committee B)

- ... Develop a list of desirable achievements for teenagers who have not gone beyond primary school. (Committee C)

- ... Develop a list of desirable achievements for adults who have not gone beyond primary school. (Committee D)

- ... Determine the relative importance of primary education objectives - using as references the desirable achievements of teenagers and adults. (Committee H)

- ... Determine which primary objectives can be or should be learned in formal school as opposed to the use of other community resources for learning. (Committee E)

Analysis: Compare results with those other other alternatives on the basis of (1) feasibility, (2) acceptability, (3) comprehensiveness and (4) validity. (Staff)

... Review results of study. (Steering Committee)

Alternative #4

Steps

... Generate behavioral examples of primary education achievements for generalized categories of objectives previously prepared. (Committee B)

... Develop a list of desirable achievements for teenagers who have not gone beyond primary school. (Committee C)

... Develop a list of desirable achievements for adults who have not gone beyond primary school. (Committee D)

... Determine relative value of adult achievements. (Committee F)

... Determine relative contribution of primary education achievements to adult achievements: P to A - using teenage achievements for references only. (Committee I)

... Determine which primary objectives can be or should be learned in formal school as opposed to the use of other community resources for learning. (Committee E)

Analysis: Compare results with those of other alternatives on the basis of (1) feasibility, (2) acceptability, (3) comprehensiveness and (4) validity. (Staff)

... Review results of study. (Steering Committee)

Alternative #5

Steps

... Generate behavioral examples of primary education achievements for generalized categories of objectives previously prepared. (Committee B)

... Develop a list of desirable achievements for teenagers who have not gone beyond primary school. (Committee C)

... Develop a list of desirable achievements for adults who have not gone beyond primary school. (Committee D)

- ... Determine relative value of adult achievements. (Committee F)
- ... Determine relative contribution of teenage achievements to adult: T to A. (Committee J)
- ... Determine relative contribution of primary education achievements to teenage achievements: P to T. (Committee K)
- ... Determine which primary objectives can be or should be learned in formal school as opposed to the use of community resources for learning. (Committee E)

Analysis: Compare results with those of other alternatives on the basis of (1) feasibility, (2) acceptability, (3) comprehensiveness and (4) validity. (Staff)

- ... Review results of study. (Steering Committee)

The five alternatives resulted from a need to examine methods for (a) developing objectives initially and (b) judging the relative value of given objectives for inclusion as "life-skills." Specifically, the main foci of the two methods can be stated as questions:

- (a) Can objectives best be developed by asking persons with appropriate expertise (1) simply to list types of objectives and behavioral examples or (2) to provide numerous behavioral examples for general categories of objectives which are prepared in advance?
- (b) Can the relative value of objectives for inclusion best be judged by asking persons with appropriate expertise (a) simply to indicate relative importance of primary objectives or (b) to judge the relative contribution of primary objectives to specific achievements of teenagers and adults?

#### Progress:

A three-week tryout was conducted in the Cebu City area of the Philippines in April-May 1973. More than 500 community members participated in making the types of judgments indicated above.

Results indicate that both methods (unstructured and structured) for gathering an initial post of objectives should be used. Although the overlap was substantial in the kinds of objectives derived from the two methods, there was sufficient uniqueness between the two methods to justify the recommendation that both be used in the future.

The four methods for judging relative value/importance of the objectives in the pool provided remarkably similar results (intercorrelation

coefficients among the four were all above 0.70). It was decided, however, that the method of most potential utility (combining both administrative feasibility and adequate criteria of judgment) was the one requiring the judgment of relative contribution of primary education achievements to adult achievements. The final report:

Jasin, A. The development of a model for deriving life-skills objectives for primary education. Singapore: INNOTECH, June 1973. (Working Paper).

It was intended originally to apply the recommended model in Vietnam so that the results could be generalized to other countries of the region. The Indonesian government through the Office for Educational Development (BPP), however, has determined to apply the model in its revision of the primary curriculum. INNOTECH welcomes wholeheartedly such utilization of its products by member nations (and would warmly welcome any increased utilization by others in the SEAMEO community). We have consulted with the BPP on both planning and conduct of the Indonesian study.

Comparative Study of Present Educational Objectives of SEAMEO Countries as these are Represented by Official Documents
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- Purposes:
- (1) Provide inputs to the study of life-relevant objectives for students for whom primary education is terminal.
  - (2) Compare the use made of published objectives among member countries.
  - (3) Compare the use made of published objectives in terms of curriculum design and evaluation.
  - (4) Compare processes in use for updating objectives.
  - (5) Compare different priorities and emphases of member countries.
  - (6) Compare methods for classifying objectives.
  - (7) Provide a comparison of published objectives on a sufficient number of bases to allow member countries to draw their own conclusions as to how each might improve their own objectives.
  - (8) Provide member countries with alternative models.

Summary Description:

The study was designed to (1) collect published primary education objectives from all SEAMEO countries, (2) translate all into English, (3) make comparisons based upon the above purposes, (4) publish a draft final report, (5) hold discussions with officially-designated committees in each country to insure accuracy and correctness of interpretation and (6) revise and

publish in two volumes for dissemination throughout the region. The first volume reports the study and the results of the comparative analysis. The second volume is to contain the published objectives by country.

Progress:

The project was reported in November 1973 as two volumes:

Tiro, A. A., Sudomo, M., Maneahindan, L. F., Prachak Deeprawat, Tran Thi Bich San. Primary school objectives, Volume I. Comparison among SEAMEO countries. Saigon: INNOTECH, September, 1973 (INNOTECH/PE-FR/Vol. 1/73).

Tiro, A. A., Sudomo, M., Maneahindan, L. F., Prachak Deeprawat, Tran Thi Bich San. Primary school objectives, Volume II. Representative examples from SEAMEO countries. Saigon: INNOTECH, September, 1973 (INNOTECH/PE-FR/Vol. 2/73).

Evaluation:

Within the constraints of the available published objectives, the study provided a relatively thorough examination of the primary education objectives of the eight SEAMEO countries. The publication of the actual objectives obtained from the member countries (Volume II) are especially valuable to those in the region who desire to improve the objectives in their own countries by examining what others are doing. Dr. Tiro is to be congratulated for completing a difficult task in minimum time.

Priority Setting
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Purpose: Provide a model whereby SEAMEO countries can establish priorities among educational objectives as a basis for the allocation of educational resources.

Description:

The value-contribution method developed by the BPP in Indonesia was used as the framework for the model. Essentially, the procedure provides a means for judging the relative values of national goals, for judging the relative contributions that the attainment of educational objectives would make toward national goals, and for calculating the resulting relative values of educational objectives. Two educators from Indonesia (Drs. Soedijarto and Soetjipto) spent two months at INNOTECH drafting a report of the model. Two chapters were added by INNOTECH. One was a self-instructional module (prepared by M. Nathenson) on the basic steps in the model's procedure. The other was prepared by V. Campbell and gave background, rationale, theory, comparison with other methods and a step-wise sequence for the value-contribution method.

Progress:

A report was published and distributed in April 1974:

Sudijarto and Sutjipto. Setting priorities among educational objectives. Saigon: INNOTECH, April, 1973 (INNOTECH/SP-FR/74).

Project RIT: Reduced Instructional Time

Purpose: RIT and IMPACT (reported elsewhere) have been the two major research projects of the INNOTECH Center, and both were dedicated to finding means for providing effective mass primary education at a substantial reduction in per pupil costs. Monies thus saved can be utilized in providing education for the 50 percent of the children in Southeast Asia who presently are unable to complete a primary education.

Project RIT has been an attempt to reduce per-pupil costs by (a) reducing the amount of learning time that a child must spend in achieving a given educational objective and (b) reducing the amount of time that a teacher must spend in assisting children in their learning. The ultimate result of Reduced Instructional Time would be a rescheduling of activities so that the same school facilities and personnel could be used for the education of more children.

Rationale:

Per-pupil costs of primary education must be reduced if more children are to receive an education because an increase in the total budget is unlikely. Teacher costs account for the largest portion of budgets, and means should be sought to increase the number of children that one teacher can educate.

Traditional methods of instruction are notoriously inefficient in every country. Teachers and students spend an inordinate amount of time on inessential activities. Instruction can be made both more effective and efficient through appropriate design of the instructional programme. This particular aspect of INNOTECH's research programme should limit itself to helping present schools and teachers to increase the efficiency of instruction.

The possible outcomes of more effective-efficient instructional processes probably lie in the rescheduling of classes, and there are a wide variety of schedules that may take advantage of more efficient learning. And the particular schedules which are possible may depend largely upon the particular circumstances, traditions and cultures (both national and local) in which new instructional programmes are to be accepted.

Summary Description:

Project RIT was planned in three phases:

Phase I takes a representative sample of learning segments (of approximately 4-6 hours) from the curriculum and redesigns the instructional materials and procedures to achieve a combined Increased Learning

Rate (ILR) and Reduced Student-Teacher Interaction (RSTI). Two to four "mock-ups" are tried out in schools for a 1-2 hour portion of each sample. Following tryouts a single "mock-up" is used for a 4-6 hour experiment comparing experimental and control groups.

Phase II encompasses the RIT redesign and rescheduling of the complete Vietnamese primary curriculum based upon what was learned in Phase I. (2 years)

Phase III is the implementation of the redesigned and rescheduled curriculum in two large pilot schools, one rural and one urban. (2 years)

Progress:

Twenty 5-8 hour segment of learning from the Vietnamese curriculum were being sampled as a basis for generalizing results to the full curriculum. All different types of learning, in different subjects and at different grade levels made up this sample of 20 segments.

The staff had previously tried out two to four approaches for each of the above segments, trying to find a single approach for each segment which would best Reduce Instructional Time. Tryouts compared different approaches in terms of (a) instructional time of both student and teacher, (b) achievement levels, (c) student interest and (d) administrative feasibility. There was no attempt at that time to make experimental comparisons with control schools. A single approach for each of the 20 segments was then revised and polished in preparation for a lengthy experimental phase.

Experiments were begun in February 1975 in both urban and rural schools of Vietnam. For each approach, there were to be four experimental classes: boys and girls in rural and urban schools. The staff also had selected two sets of four classes (comparable to those for the experimental group) to act as controls. Teachers and students in one set of control schools were told about the experiment and about our desire to compare the achievements of RIT experimental students with those in control classes. It was thought that this knowledge might influence control teachers and students to do as well as possible and, thus, provide a good basis for comparing RIT and traditional approaches, both taking place under a fairly heightened level of interest and involvement. The other control set of four classes learned in the normal way without being made aware that their achievements were to be compared with those of experimental classes.

Thus, each of the 20 segments of the curriculum were to be learned by either experimental or control methods in 12 classes...a total of 240 classes of 5 to 8 hours each....a substantial undertaking!

On April 6 of this year, all primary schools in Vietnam were closed for security reasons. The project staff, including 25 teachers, had at that time completed only about one-third of the experiment, including pre and post-testing. For no segment of learning had the full twelve classes been included. The kind of data available would not permit a formal statistical

comparison, e.g., there may have been results available for urban girls (Experimental), rural boys (Control I) and urban boys (Control II)...no basis for formal comparisons.

Evaluation:

Before evaluating the results of Project RIT itself, I would like to comment on the RIT Vietnamese staff. On 15 April 1975 the fall of Saigon was near and only Vietnamese staff members remained at INNOTECH. It is to their credit that they spent that fall day with me reviewing the results of field tests which had only been partially completed before the close of schools. It is also to their credit that they were able at that time to develop a revised research plan, building upon the results to date. The Vietnamese staff:

Nguyen Ngoc Chau  
Le Thanh Viet  
Tran Thi Khue  
Dao Kim Phung  
Tran Huu Long

The following appeared in INNOTECH's June 1975 Newsletter which was published in Bangkok:

"RIT was being conducted solely in Vietnam. This project, along with our high hopes for it, has been temporarily disrupted. But our high hopes were fully justified. This reporter spent the full day of 15 April reviewing the results of RIT experiments which had completed at that time ....and they were impressive. The experiments were only almost one-third completed, and even the partial data are now lost to us. Thus, I cannot report numbers; I can only give conclusions from the numbers I saw.

But, my own examination of these partial data has led me to conclude that PROJECT RIT WAS ABOUT TO SUCCEED.

....In all cases but one, student learning time of RIT classes had been reduced to at least one-half of that of control classes.

....In at least one-half the cases, teacher time had also been substantially reduced (in addition to the teacher time saved by the reduction in student learning time).

....In all cases, the achievements of RIT classes were higher than those of control classes, even when RIT rural boys were compared with control urban girls.

In all cases RIT achievements were higher.

These results are the reasons why we have said that 'our high hopes were fully justified.'"

A progress report was reproduced in August:

INNOTECH, Project RIT for mass primary education. Saigon:  
INNOTECH, August 1974 (INNOTECH/RIT-PR-1/74).

Project IMPACT
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- Purposes:
- (1) Utilize a community learning center concept as a framework in the development of a mass primary education delivery system.
  - (2) Establish complementary rural primary education field projects in at least two Southeast Asian countries.

Summary Description:

The IMPACT system has (or will eventually have) the following characteristics:

- .... A single teacher is responsible for the education of up to 200 children.
- .... Teachers rather than teaching in conventional classrooms, become managers of a variety of educational experiences of children. Because the teacher's role is changed to one of supervision, their new title is Instructional Supervisor (IS).
- .... The IS manages a Community Learning Center which is the hub of all learning activities in the community.
- .... Learning is modular, self-paced and ungraded. Children progress as fast or as slow as they are able.
- .... Modules at upper age levels take the form of self-instruction, peer-group learning, use of community resources, skill training, etc.
- .... Modules at the lower age levels typically are concerned with reading and numeracy, and learning takes place in small groups in which younger children are taught by older students who are "programmed" to teach specific modules. These older students are thus called "programmed teachers."
- .... Post-primary students and community members serve as tutors and learning center aides on a voluntary basis. Tutors are specifically trained to administer post-module tests and to remediate learning weaknesses.

.... Community members with special skills are enlisted to aid students in learning applied skills and social studies modules relevant to their specialties.

..... Parents are taught ways to monitor and encourage the learning of their own children.

No single component of IMPACT is new; all have been proved of value in the past. What is new is the management of these many components, and it is the reason why IMPACT is an acronym for Instructional Management by Parents, Community and Teachers.

### Progress:

Field sites and project staff are as follows:

#### Philippines

**Sites:** Five villages on the Island of Cebu near the town of Naga. The villages are (1) Naalad, (2) Pangdan, (3) Lutac, (4) Balirong and (5) Uling. Two of the villages house Barrio High Schools and there is a central high school in Naga.

**Staff:** Rosetta Mante (Project Director)  
Leandro Sanchez (Education Analyst)  
Aida Pasion (Instructional Materials Expert)  
Abner Barriga (Mathematics Expert)  
Lily Sabulao (Science Expert)  
Esperanza Rodriguez (Social Studies Expert)  
Restituta Sanchez (Language Expert - Pilipino)  
Jesus Murillo (Applied Skills Expert)  
Romelia Manit (Home Economics Expert)  
Lourdes Orat (Reading Expert)  
Norma Sellon (Language Expert)  
Benjamin Montejo (Editor)  
Damiana Latonio (Pilipino Expert)  
Aquiles Cabarrubias (Mathematics Expert)  
Bibiana Conde (English Expert)  
Rebecca Belleza (English Expert)  
Carolina Mendiola (Rural Education Coordinator)  
Maximino Alcosaba (Instructional Materials Officer)

#### Indonesia

**Sites:** Four villages in Central Java near the town of Surakarta (Solo). The villages are (1) Kebak, (2) Alastuwo, (3) Bandjajarjo and (4) Malangaten.

**Staff:** Boorham Respati (Project Director)  
M. Saleh Muntasir (Project Associate)  
Soethadi (Language Specialist - Indonesian)  
Soemitro (Language Specialist - Javanese)

Soehardjo Danusastro (Instructional Methods Expert)  
Maryono (Instructional Materials Officer)  
Lithon Sunyoto (Science Specialist)  
Soeparjo (Mathematics Specialist)  
Soeharno Ts (Applied Skills)  
Roesdi (Indonesian Language)  
Danarto (Social Studies)  
Soeharsono (Applied Skills)  
Widodo Kimo and Saleh (Rural Education Coordinators)

IMPACT was begun in January 1974, with learning activities starting in June (Philippines) and September (Indonesia) of that year. The experimental plans in the two countries are different in detail, but both are wisely following a relatively slow developmental sequence, one which makes sure that a given step or component is functioning well before going on to the next step.

For example, rather than developing learning materials and procedures for the full primary curriculum, the start was made solely with students at the Fourth Grade level. At first the instructional supervisors played all roles (tutor, parent, and community specialist). By doing so, they could control, guide and modify learning functions to give students experience with self-paced modular learning at the center before being introduced to other aspects of the system. The supervisor of the project staff gave post-tests and remediation, playing the part of the tutor.

Once these in-center learning activities were running smoothly, "homework assignments" were given, and the parents were oriented to their roles in monitoring and encouraging self-study.

The next step of recruiting and training tutors was undertaken only after home study was functioning well with parental participation. Peer-group learning, contracting and an organized incentive system are quite recent developments.

The relatively slow developmental sequencing has disappointed some observers who, presumably, had expected to see IMPACT more fully developed when they visited field sites. Early observers saw children going to school each day as before and often saw them studying their modules sitting at their desks in a Fourth Grade classroom. Was this IMPACT? No, it was not, but it was part of the planned development. Other observers commented on the fact that instructional supervisors were only managing the IMPACT learning of some 35 children rather than the 200 that had been expected. Was this IMPACT? No, it was not, but, again, it was part of the planned development.

"Community Learning Center" is the term being used at the field sites rather than "school." Philippines held an in-country seminar in December 1974 on the function and design of such centers. Although they are using existing school buildings, they have modified and partitioned them to provide different stations, including a multi-purpose area, a library and materials area, a display area, a testing area, etc. Parents have built five to ten thatch and bamboo kiosks at each center for individual and small-group learning.

Indonesia also is using existing school buildings, but they have rearranged the old classrooms so that small peer groups can study together and have set up material storage and distribution stations for the learning modules. There appear to be no problems associated with developing center facilities with the exception of sufficient space at one Indonesian center for the construction of kioskos.

The use of community education centers for continuing and adult education has, understandably, been given very little consideration to date because of the need to get IMPACT functioning at the primary level. Indonesia, however, intends to bring out-of-school youth into the IMPACT system at a fairly early date.

The full primary curriculum has yet to be covered by IMPACT at the field sites. The Philippines began at the Fourth Grade level<sup>1</sup> in June 1974 and added the First, Second and Fifth Grades in June 1975. Grades Three and Six will complete the curriculum in June 1976 for a final tryout year and will be followed by a demonstration year running from June 1977 through March 1978.

Indonesia began IMPACT learning with the third trimester of Grade Four in September 1974. Beginning in January 1975, both Grades Four and Five were included. In January 1976, Grade Six will be added, and it will be followed by Grades One through Three in January 1977. The Indonesian demonstration year is thus planned for January-December 1978.

Even though the above grade levels have, or will be, included at the sites, all subjects are not necessarily included at all centers. The Philippines included only two subjects (Language plus one other) at each center from June through December 1974, with different subjects being tried out at the different centers. However, in January 1975, all subjects were included at each center. This progressive implementation was in keeping with the idea of sequencing experimental steps, making sure that a given step (in this case the modules themselves) was working well before proceeding to the next step.

Indonesia's progressive implementation of subjects at the different centers is even more prolonged. The first trimester for students new to IMPACT includes only two subjects, the second trimester four subjects, and the third trimester all subjects. Thus, in January 1975 (the first trimester of the year), the students who had been learning two subjects via IMPACT modules in the last trimester of Grade Four graduated to Grade Five and began having four subjects and progressed to all subjects in May 1975 at the start of the second trimester. Beginning Grade Four students in January 1975, however, started with two subjects and increased to four in May. They will receive IMPACT instruction in all subjects beginning in September. The same two-four-six progression has been planned for all grades/students.

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<sup>1</sup>You will have to excuse my use of "grades," even though it is contrary to the nongraded concept of IMPACT. Their use allows a more convenient descriptions of progress and plans at various levels in the primary curriculum.

Several serious problems resulting from progressive implementation have surfaced. In the Philippines, both students and their parents felt that IMPACT learning was better than traditional classes, and they felt "cheated" by not having all subjects modularized at one time. (This same complaint also is being made about the grade levels not included in IMPACT to date.) There was also a complaint from teachers that some students were spending too much time on their modules and ignoring the subjects not modularized. Because all subjects were included beginning in January 1975, the problem has disappeared in the Philippines.

Indonesia also has a serious problem because of this progressive implementation of subjects. Normal class periods and normal class seating must be maintained for subjects not in the IMPACT system. This situation does not allow centers to modify their space arrangements for IMPACT to any great extent. Of greater seriousness, however, is that the maintenance of class periods for non-IMPACT subjects tend to force IMPACT studies also to follow set class periods. Students do not finish a module in a given subject before switching to a new module in a different subject at the ringing of a class bell. Also instructional supervisors cannot be full-time; they must reassume their old classroom roles at set times. There is little of the IMPACT system, per se, that can be tried out under these conditions except for the modules themselves. The Indonesian staff has scheduled a thorough review of research plans, and they may be able to include all subjects beginning in September 1975.

High student-teacher ratios, which are targeted by IMPACT to be as large as 200 to 1, are yet to be seen. The present state is fully justified because instructional supervisors need to get sufficient experience with the management of the system before taking on the responsibility for such large numbers.

The first step in the direction of the high ratios of IMPACT was taken in June 1975 in the Philippines. And this was an important step. The Grade Five teacher in each of the five villages was transferred to a different school, and the IMPACT Grade Four instructional supervisors became responsible for both Grades Four and Five.

Future plans in both countries call for only two instructional supervisors at each center during the 1978 demonstration year. Whether this goal can be met is something that cannot be foretold; only as the instructional supervisors and project staffs gain more experience will it be known if such a reduction in professional educators is possible.

The Philippines plan to have one supervisor for Grades Four, Five and Six and one for Grades One, Two and Three in June 1976, but present school principals are to be retained for that year. Depending upon the success during that year, it may be possible to complete the reduction of staff to the targeted two instructional supervisors by June 1977.

Tentative plans in Indonesia call for only one instructional supervisor for Grades Four, Five and Six beginning in January 1976. If this reduction is successful, it is likely that there will be only four educators per center in January 1977 (one for Grades Four through Six, one for Grade Three, one for Grades One and Two, and a principal). In 1978 there would be only two instructional supervisors.

The Philippines has combined project involvement and training through regular Friday meetings with the supervisors and by having them work full time at the field office helping to develop learning and management procedures during vacation months. The Grade Four supervisors were fully confident of their ability to manage Grade Five when I visited the Philippines in May of this year. Indonesia also holds weekly meetings with the supervisors and has developed an observational checklist (primarily of supervisor behaviors) as an aid in monitoring, evaluating and improving instructional supervisor performance.

Staffs at both sites obviously are well aware of the need to develop supervisor training and management systems and to support them fully as they undertake even greater responsibilities.

The development of reusable modules is essential to the tryout of IMPACT because they constitute the basic learning activities of IMPACT students.

Early module preparation at the two sites resulted in some fairly stylized and repetitive self-instructional modules that were geared to language competencies rarely found among IMPACT students. Tryouts, revisions, and brainstorming sessions for new ideas have brought about a refreshing variety of learning modules in more simplified language. (Language competencies of students in the Fourth Grade were typically not adequate for even the simple modules and remedial language courses were necessary in both countries, with 20 special remedial modules having been developed in the Philippines. This problem should disappear once IMPACT is installed at the earlier grades, as well.) Whereas earlier modules and their post-tests tended to emphasize memorization, the newer modules cover the development of practical skills, concept formation, and practice in and generalization of knowledge. The earlier fairly-repetitive modules presumably could have led to student boredom. The later modules, because of their variety, could conversely have lead to student confusion. This potential problem was anticipated, and short practice modules of each variety have been developed so that students may "learn how to learn" each type of module. Practice modules, particularly in Indonesia, have been quite successful. A total of 26 such practice booklets are in use in that country. The initiation of peer-group learning also has eliminated much of the confusion that some children had earlier when they were studying on their own.

In both countries, the subject specialists who develop modules have been so industrious that the production staff has been hard pressed to keep up. The original one mimeograph machine was not up to the task, so an additional machine was purchased in each country. One illustrator at each site could not keep up, so another was recruited. Similar staff increases were made throughout production staffs, printers, proofreaders, collators and binders.

But, as a result, module preparation and production has been able to meet (with some few exceptions) the needs of students at the centers. The Philippines produced 326 modules for Grade Four,<sup>1</sup> and by April had prepared 21 for Grade Five and had revised a substantial number of previously used

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<sup>1</sup> As will be seen later, 326 modules at one grade is far more than is required and more than can be reasonably used by students.

Grade 4 modules. In addition, the Philippines had drafted 213 lessons (about 45 modules) for Grades One and Two. By the same date, Indonesia had prepared 170 of the targeted 177 for Grade Four and 117 of the targeted 186 for Grade Five.

The majority of modules are designed for self-instruction so that children can learn away from the center, if necessary, and so that those who prefer to learn by themselves in some subjects may do so. Most IMPACT learning to date in the Philippines has been by self-instruction, both at the center and at home. There has been less individual learning in Indonesia because four children study one module together at the Center, but children in that country do regularly take modules home for study, and I was told that those who are sick at home ask friends to bring modules so that they may study.

Buddy-system learning (the pairing up of two students to learn together) does occur quite regularly in both countries. It is most evident during block reviews when students pair up and use flip cards in their review.

Peer-group learning seems to have been very effective in Indonesia. Instructional supervisors report that the more able in each group are of great help to the less able. Thus, they attempt to keep some heterogeneity in their grouping.

In the Philippines, peer-group learning was only encouraged during the final academic month, so little can be reported. Over the two-month vacation period, however, subject specialists, the educational coordinator and instructional supervisors developed a scheme to instruct students how to make best use of peer-group learning.

Programmed teaching, as the primary mode of learning for beginning students, has just begun. Four Philippine specialists in beginning education have spent five months (January-May 1975) developing and trying out programmed teaching techniques and materials. In doing so, they have been working regularly with teachers of Grades One and Two...teachers who have become instructional supervisors with the start of the academic year in June.

Plans are for the Supervisors themselves to act as programmed teachers for a month or two while they work out any problems in the procedures and while they teach older students to take over programmed teaching responsibilities. By August or September, a visitor to the Philippine IMPACT site should be able to observe older students being programmed teachers to younger children.

Tutorials by post-primary students have been a part of the experimental program for a number of months. And tutorials are progressing as planned with instructional supervisors reporting generally that tutors are of real help in student learning.

In both countries, special courses were designed to give tutors practice in this new role. Up until June of this year all tutors were "home grown," i.e., brothers, sisters and neighbors of IMPACT students. Tutors typically performed their duties at home rather than at the center. (The exceptions being Barrio High School students acting as center tutors in the two Philippine villages which have such schools).

In the Philippines, post-tests have not been administered away from the center, whereas tutors do administer tests and remediate deficiencies at home in Indonesia. In both countries, plans are for the assignment of secondary students to act as tutors in the center on a regular basis. In-center tutorials are scheduled for June in the Philippines and for September in Indonesia.

Incentive systems for tutors are, as yet, fairly primitive. The Philippines gives high school credit for tutoring, gives tutors special recognition at their year-end fiesta in March and is considering a variety of other rewards based upon behavior. To my knowledge, the extent of the tutorial incentive systems operating in Indonesia is the regular recognition given them in meetings with instructional supervisors and educational coordinators. Indonesia has also developed a behavior checklist for tutors.

Parental involvement is evident at both sites. Through meetings and illustrated pamphlets parents have been informed of their responsibilities in the learning of their own children. Students take home their achievement slips so that parents may follow their progress, and several parents have come to the center to find out what they could do to help their child when the take-home slips were not being taken home. It would seem that, once the systems of tutoring and contracting are functioning well, parental involvement would become a more clear-cut function.

When I asked instructional supervisors what their biggest problem was, the answer was parents. Despite staff and center efforts, a large number of parents tend to leave the education of their children up to the professional educators. Should the community learning center in the future create greater total community involvement, social pressures may provide the needed incentive for parents to participate in their children's learning activities.

#### Evaluation:

Achievements of IMPACT students equal or surpass those of students learning in the traditional fashion. In March, the Philippines administered criterion-referenced tests to all IMPACT students in Grade Four. Since modular learning for Grade Four first semester was only in two subjects (language plus one other) a given student could be considered as "experimental" in his modular subjects, as "control" in his traditionally taught subjects. The result: IMPACT achievements either exceeded or equalled non-IMPACT achievements. A standardized language battery of seven tests also was administered to Grade Four IMPACT students, to Grade Five students (traditionally taught) in IMPACT villages, and to Grade Four students in nearby villages. The result: IMPACT achievements exceeded non-IMPACT in six of the seven tests.

In Indonesia, tests are administered to all schools at the end of each trimester by the provincial education office. Those administered to IMPACT students in December (after only one trimester of modular learning) were compared with those administered to students in five neighboring villages. Results: mean scores by IMPACT students exceeded or equalled those of non-IMPACT.

Block post-tests were given in Indonesia in December and again in April to both IMPACT and control students. In all cases, IMPACT achievements were higher. These results are not surprising because the tests were based upon the modules, but the encouraging part of these results is that mean test scores of IMPACT students over all the subjects ranged from 71 to 93 percent. Since the scores represent learning before post-block remediation, we can tentatively conclude that the self- and tutor-evaluation/remediation sequence is leading in the direction of mastery learning.

So much for these early indicators of student achievement; they seem good. However, IMPACT is particularly difficult to evaluate via experimental/control achievement testing. Because of self-pacing, some IMPACT children would be ahead and some behind the curriculum schedule at the time of testing. When reviewing these project evaluations with field staffs, two very different problems emerged in the two countries, both of which are essential to the experimental development of IMPACT.

First the Philippines: Self-pacing is much in evidence with some 20 modules in a given subject separating the faster and slower students. Good! But on examination of the progress of the slower students, it was found that they may spend as much as one week on a module -- a pace that is one-fifth as fast as the planned three to five hours per module for an average student. If something isn't done, I fear that some of these youngsters are going to give up because of their lack of progress. The solution that the Philippines is now trying is to allow no regularly attending student to spend more than two days on a module by (a) monitoring their progress closely, (b) giving extra tutorial help, and (c) being less strict (with these few students) in applying the mastery criteria. As peer-group learning is expanded, there also should be some positive effect on these slower learners.

The other Philippine problem which surfaced is a credit to the diligence of the subject-matter experts in that country: they produced 326 modules for Grade Four alone, and no child could possibly complete them all and no child did. The "average student" still had some 20 percent of his modules to complete in every subject at the close of the academic year in March 1975. In addition to field staff diligence, this problem stems from the heavily loaded Philippine curriculum. I was told (by teachers) that "no teacher ever covers all this material." The obvious solution is to pare down the curriculum to a manageable size. The Regional Superintendent of Schools has had his staff working with the IMPACT staff in reducing content (without sacrificing educational objectives).

Both Philippine problems are on the way to being solved.

Self-pacing in Indonesia is quite different; and their problems in the experimental development of IMPACT also are quite different. There are approximately 180 Grade Four modules -- right on target. Essentially, all children complete all the modules within a given trimester -- a condition which might be good if it were accompanied with the knowledge that a number of students were progressing more rapidly than the others. But such is not the case; there is only a 2-to-3 module spread between the faster and slower children. Why?

One reason was given earlier: because all subjects are not learned via IMPACT for the first two trimesters after a student is brought into the system; set class periods are scheduled for both IMPACT and non-IMPACT learning. When I reported this on an earlier page, I also reported that the staff is reviewing development plans, particularly in relation to putting all subjects under IMPACT at an earlier date. This change in plans seems essential.

When I earlier described reusable modules, I reported that Indonesia was supplying each center with one module for every four children. What I didn't tell you at that time is that four children are studying one module together. And all children in a center are studying the same module at approximately the same time. This situation was brought about by the need to insure that all students be prepared for the achievement tests given by the provincial office at the close of each trimester. The field staff is well aware that the successful development of the IMPACT concept in Indonesia may well hinge on their ability to overcome this administrative hurdle. A meeting of officials from Indonesia, SEAMEO, and INNOTECH was held in June, and the above problem was high on the agenda.

Dropout rates were cut in half at IMPACT centers this past year, a reduction that could be ascribed to a number of factors -- the meaningfulness and enjoyability of IMPACT learning, the obvious interest shown by a large number of prominent visitors, the newness of the situation, community pressure. Whatever the reason, attendance is up, and the Philippines reports that many more students will be in IMPACT centers this coming year because a number of children from nearby villages will be coming to IMPACT centers rather than attending primary schools in their own villages.

There are also several isolated cases of dropouts returning to the center after an extended absence -- something difficult to do in a traditional school. One bright child was out for one month and completed 17 modules in one week on his return. A 14-year old fruit seller studies IMPACT modules at her fruit stand in the Philippines. But these are isolated cases. Once the burden of developing the system for those children who are "in school" is reduced, field staffs can give more attention to continuing education.

Community involvement has begun. Parents and other community members in the Philippines have helped the centers renovate school buildings as centers and have built learning kiosks of thatch and bamboo. A local priest was primarily responsible for doubling the enrollment at one center by working with parents. A file of community skills is kept at each center, and skill instruction will begin with the Fifth Grade modules in applied skills and social studies.

Three members of the Alastwo community in Indonesia began teaching primary students in June. They were trained by the Education Coordinator and represent a pilot study to develop appropriate methods. Skills being taught are poultry raising, sewing and hygiene.

In summary, IMPACT has been functioning in the Philippines for one year and in Indonesia for less than one year. For a project with the scope of IMPACT, progress to date has been impressive. Children are learning by

modules, tutors are giving remedial help, and instructional supervisors are managing learning activities. In a short time, programmed teaching and community skill teaching will have started. A few persistent problems remain: an overloaded curriculum in the Philippines, a lack of self-pacing in Indonesia, the need to develop inexpensive incentive and contracting systems, the lack of total parent involvement, etc. But, progress to date is indeed impressive. There is every reason to suppose that the present successes of IMPACT can be continued and that a full-fledged working system can be achieved by the 1978 target year.

Three independent evaluations:

"To the writer's knowledge, there is no R&D activity underway anywhere...which can compare to Project IMPACT in scope, in support, in seriousness of effort to develop and try a system which could be an alternative to the present system, or in progress or accomplishment....."

- Robert Jacobs, University of Southern Illinois

"Quite frankly the success to date is much greater than I expected or that most of us could have hoped for. Because they (staff) are so close to the project I am not sure they themselves always realize what they have accomplished. Essentially, they have made most of the elements in the original hypothesis work at the Grade 4, 5, and 6 level. They have shown that this approach is more efficient in most subjects than the traditional method."

- Donald Simpson, International Development Research Centre, Canada

"To double the cost-effectiveness of any system, especially an educational system, is a remarkable accomplishment, even more remarkable in the context of the less-than-optimal circumstances of IMPACT's operation. To me, these findings, together with the scope of the IMPACT concept, suggest that this project is one of the most important experiments in education anywhere, matched only by the Open University experiment in England."

- Douglas Ellson, Indiana University

IMPACT reports:

Milan-Baduel, C. and Respati, B. Project IMPACT for mass primary education. Saigon: INNOTECH, August 1974.

Nichols, Daryl G. The IMPACT system for low cost primary education. Washington, D. C.: American Institutes for Research, July 1975.

Research Proposals

Two proposals are currently outstanding:

- (1) Human Resources Development in the Lower Mekong Basin
- (2) Preparation of Teachers for Non-Traditional Roles

## TRAINING

Beginning in September 1970, eight interns (one from each SEAMRO country) began a year-long course of research and training at INNOTECH in Singapore. The systems approach to solving educational problems provided the emphasis for both training and research. These eight Southeast Asian educators joined with eight others who were attending a three-month research program to conduct three research projects described earlier as projects "Progress," "Action," and Clear."

In 1971, fifteen interns participated in INNOTECH's "learning by doing" training program. An additional eight educators attended the three-month course, focusing on a Project Progress research titled "Primary Objectives of Primary Education."

Sixteen interns began a 10-month course in September 1972. They joined 24 other educators in the first modularized three-month course (see below) before joining INNOTECH as adjunct research staff members. As staff members they participated in (1) the life-skills objectives study, (2) a comparative study of educational objectives in SEAMEO countries, and (3) subsequent three-month training courses, acting as staff advisors. The intern program was discontinued in 1973.

Beginning with the September-December 1972 three-month program, it became modularized and basically self-paced. Since this program is being continued and will be held three times each year, a description of the 1974 program is given below.

### Purposes:

1. *General Purpose:* Provide key educators of the region with skills and knowledges necessary for educational planning, decision-making, and application of realistic change strategies.
2. *Specific:* After the three-month training program, each participant should be able to:
  - a. Construct an educational planning systems model for appropriate use in the Region's educational systems;
  - b. Utilize the systems approach in decision-making in educational planning; and
  - c. Apply innovative change strategies in solving regional, national, and on-the-job educational problems.

### Description:

Thirty-two educators attend the course for three months. It is held three times each year.

A systems approach is used as the basis for solving educational problems. Key elements in the approach are:

- ... problems
- ... objectives
- ... resources and constraints
- ... alternative solutions
- ... criteria for analysis of solutions
- ... tryout
- ... evaluation, feedback, and revision
- ... implementation
- ... change agent behavior.

Training content is modular and basically self-paced. Most modules are self-instructional and are in four languages (English, French, Indonesian, and Thai). Self-study electives and group enrichment seminars are employed in addition to applied projects on selected problems. Throughout the course, each participant applies what he has learned to two types of problems. The first is an individual effort in applying the systems approach to an on-the-job problem of his own in his home country. The second is a country team project in applying the approach to national problems.

Content:

<u>Estimated Time</u>	<u>Module No.</u>	<u>Title</u>
2 days		ORIENTATION AND SOCIALIZATION
5 days		OVERVIEW OF EDUCATIONAL PROBLEMS OF SOUTH-EAST ASIA AND OF THE WORLD
	1	The World Educational Crisis ) Panel Discussions ) by Country Groups
	2	Educational Problems of Southeast Asia ) on "Outstanding ) Problems in My ) Country" followed
	3	How to be a Good Minister of Education, etc. ) by open forums ) (to be held in ) the afternoons).
	<u>Electives</u>	
		A-1 "INNOTECH Concepts," Sim
		A-2 "Outstanding Problems in Asiland"
		A-3 "The Quality of Education in Developing Countries," Beeby
10 days		INNOVATION AND TECHNOLOGY
	4	"Instructional Technology and the Learning Process," Gagne
	5	"The Concept of Innovation"

<u>Estimated Time</u>	<u>Module No.</u>	<u>Title</u>
	6	Project IMPACT
	7	Project RIT
	8	"Programmed Teaching: Effective Teaching by 'Unqualified' Teachers"
	9	"Some Other Innovations in SEAMEO Countries"*
	10	Seminar on Innovations in SEAMEO Countries (separate country reports)

Electives

	B-1	"The Alternatives to Schooling," Illich
	B-2	"Effective Teaching by Unqualified Teachers" (Final Report of Study)
	B-3	"Instructional Innovation and Individualization," Klaus
	B-4	"The Open University: Every Man's Classroom"
	B-5	"Instructional Media" (Slide/Script Presentation)
	B-6	"The Effectiveness of Instructional Radio"
	B-7	"Project PLAN: A System of Individualized Instruction"
	B-8	"A Personalized System of Instruction: An Alternative to Schooling"
10 days		THE SYSTEMS APPROACH
	11	"Why Systems Approach?"
	12	"The Systems Approach to Education," Lehman
	13	"Application of a Systems Approach to Educational Improvement," Klaus
	14	"BPP Indonesian Model"
	15	"Seminar on Systems Model Building"

Electives

C-1	B. H. Banathy	<u>Instructional Systems</u> Chapters I & II.
C-2	C. W. Churchman:	<u>The Systems Approach</u> Chapters II, III, and X.
C-3	Barbee and Motzel	"A Systems Approach to the Design of Instructional Systems" (Tape/Script/Workbook).
C-4	C. Offeish:	"The Systems Approach."
C-5	Schwarz:	"Analysis of Educational Problems by a Systems Approach."

<u>Estimated Time</u>	<u>Module No.</u>	<u>Title</u>
	C-6	Snyder: "Special Matinee Feature: Attack of the Systems People."
	C-7	Corrigan and Kaufman: "Why Systems Engineering" (Programmed Test)
	C-8	Ryan: "Systems Techniques for Program of Counselling and Counselling Education"
	C-9	"The Systems Approach to Problem Solving" (Test)
	C-10	Bush: "Systems Analysis: A Method for Logical Decision Making."

APPLICATION OF THE SYSTEMS APPROACH

4 days

A. Identification of Problems

16	"Problem Solving (Slide tape) Introduction
17	"Formulating Educational Problems"
18	"Seminar on Formulating Educational Problems"

Electives

- D-1 "Problem Statements from the SEAMEO Regional Educational Planning Seminar"--Final Report, April 1971.
- D-2 Coombs: "What is Educational Planning."

B. Formulating Objectives

19	"Goal Analysis"
20	"Formulating Change Objectives"
21	"Deriving Training Objectives"
22	"Measuring the Accomplishment of Objectives"
23	"Seminar on Writing Objectives"

Electives

- E-1 Mager: Goal Analysis
- E-2 Formulation of Change Objectives from Problem Statements of SEAMEO Member Countries.
- E-3 Mager: Preparing Instructional Objectives
- E-4 Kibler, Barker, Miles: Behavioral Objectives and Instruction
- E-5 H. Mac Ashen: "Writing Behavioral Objectives"
- E-6 Popham: "Behavioral Objectives Debate" (Tape)
- E-7 Center for Educational Technology (Catholic University of America) "Preparing Instructional Objectives" (Self-Instructional Tape/Script/Workbook program).
- E-8 Popham: "Instructional Objectives" (Film-strip/Tape Program).

<u>Estimated Time</u>	<u>Module No.</u>	<u>Title</u>
	E-9	Alioto & Junghen: "How to Develop Program Objectives, Establish Priorities and Evaluate Achievement."
	E-10	"Setting Priorities Among Educational Objectives."
10 days	C.	Resources and Constraints, Generation, Analysis and Selection of Alternatives
	24	"Identifying Resources and Constraints"
	25	"The Process of Generating Solutions"
	26	"Seminar on Generating Alternatives" (Brainstorming)
	27	"The Analysis and Selection of Alternatives" (the IEII revised)
	28	"Seminar on Analysis and Selection of Alternatives"
	<u>Electives</u>	
2 days	D.	The Processes of Tryout, Evaluation and Modification
	29	"The Processes of Tryout, Evaluation and Revision"
1 day		"Seminar on Review and Revision of Systems Model"
	<u>Electives</u>	
	F-1	"Designing Criterion Tests"
	F-2	Popham: <u>Evaluating Instruction</u>
	F-3	Popham: "Modern Measurement Methods" (Filmstrip/Tape Program)
	F-4	Popham: <u>Criterion Referenced Measurement</u>
	F-5	"The Purpose of Evaluation and the Role of the Evaluator"
	F-6	"Criteria for Evaluating Tryout Projects"
	F-7	"Validation Procedures"
	F-8	CPM
	F-9	PERT
	F-10	PPBS
5 days		STRATEGIES FOR CHANGE
	30	"Acceptance Strategies"
	31	Seminar on Acceptance Strategies (Individuals or country groups will discuss how changes were brought about and came to be accepted in their own countries and present and discuss his/her own strategies for acceptance of the worked-out solution).

<u>Estimated Time</u>	<u>Module No.</u>	<u>Title</u>
	32	"The Individual as an Educational Innovator and Change Agent" (Short)
1 day		Final Examination
1 day		Course Debriefing
1 day		Au Revoir to INNOTECH

The final three-month course to be held in Saigon was completed in March 1975. As evidence of the continuity of activities which INNOTECH has maintained after leaving Saigon, the next course is to be held in September 1975 in Bangkok. (Because so many materials had to be left behind in Saigon, the Thai translation was not available, and one staff member made a special trip to Laos to obtain a copy from a previous program participant.)

A series of two-week special topic courses was begun in Saigon. These are to be held twice each year. The first course taught 30 participants techniques of programmed instruction and covered five topics:

- 1) Application of Learning Principles
- 2) Demonstration of Concept Learning
- 3) Elements and Techniques of Programming
- 4) Linear/Branching Programming
- 5) The Management of Self-instructional Activities

The second two-week course will be held in October 1975 and will be titled "Project Design and Management."

INNOTECH staff are planning a new nine-month training program as follows.

Rationale:

The nine-month instrumentality is initially addressed to the need for practically trained, applied educational researchers in the SEAMEO region. There may be academically prepared researchers who are products of training institutions within the SEAMEO region, but who lack the skills, insights, and problem-solving orientation, and basic INNOTECH concepts. If INNOTECH efforts are to be carried out in the SEAMEO region, the institutions and bodies working closely with INNOTECH must have researchers on their staffs who are capable of planning and implementing applied research, such technicians being in effect the working arms of the change agents and architects of strategy in the education sector. So this training is complementary to the three-month training program without duplicating its aims.

Purposes:

To develop applied research skills and inclinations of theoretically

trained researchers so that they can plan and/or manage innovative educational research in the SEAMEO countries utilizing basic INNOTECH concepts.

Due to the fact that the SEAMEO member countries may not be able to release many officials at a time for training, and because of the length of the course in relation to available scholarship funds, only two (2) participants from each country will be invited to reach a target of 80 trained applied educational researchers within five years.

Specific course objectives will include:

- ... Develop educational planning systems for appropriate use in the SEAMEO region;
- ... Utilize the systems approach in decision-making, educational planning, and problem identification;
- ... Apply innovative research strategies and techniques in solving regional/national/on-the-job educational problems;
- ... Conduct research activities on an identified regional/national/on-the-job priority educational problem/urgent need.

Description:

- ... Orientation on the basic INNOTECH concepts - problem-oriented, use of the systems approach, use of innovative change strategies and technology.
- ... Skills training on applied innovative research techniques and strategies through modularized self-instructional materials, tutorials, seminars, and group discussions.
- ... Problem identification/selection. Participants (2) from each country will team up in the identification/selection of a priority educational problem/urgent need, working closely with INNOTECH specialists. Participants should come up with technical working research papers.
- ... Actual research activities will be undertaken by the participants (by-country teams of two) on their research problems - conducting tryouts, collecting data, working out experiments, and the like. INNOTECH research specialists make progress assessments of research projects giving assistance to teams of participants, and tutoring them on particular applied research skills.
- ... Analysis, interpretation/critique of research and reporting of findings.
- ... Application of innovative research techniques which starts from the planning of the research documents to the completion

of the activity. The nature and scope of the research problems to be identified by participants will determine the setting, and specific activities. National problems may require participants to conduct research in their home countries; regional problems may call for activities to be conducted at the Center or elsewhere in the SEAMEO region.

INNOTECH is justly proud of its training programs, and many who have participated now hold key positions in their governments. The INNOTECH concepts are being spread and used throughout the Region. The estimated number of graduates through June 1975:

TRAINING PROGRAMS

<u>YEAR</u>	<u>INTERNS</u>	<u>THREE-MONTH</u>	<u>TWO-WEEK</u>	<u>TOTAL</u>
1970-71	8	-	-	8
1971-72	15	48	-	63
1972-73	16	47	-	63
1973-74	-	88	-	88
1974-75	-	<u>32</u>	<u>26</u>	<u>58</u>
	<u>39</u>	<u>215</u>	<u>26</u>	<u>280</u>

## INFORMATION DISSEMINATION

One of the key functions of INNOTECH is to provide the Southeast Asian Region with information which can assist in the solution of educational problems. The three primary means for dissemination are (1) Newsletters, (2) Publications, and (3) Seminars.

### INNOTECH Newsletters

The Center began a monthly Newsletter in October 1972. (Copies of Newsletters have been included in previous progress reports.) INNOTECH prints 5,000 each month.

Volume I covers October 1972 through May 1973

- In June 1973, the Center moved to Saigon from Singapore -

Volume II begins in October 1973 and runs for a full 12 months through September 1974

Volume III covers October 1974 through February 1975 and, following the relocation to Bangkok, was begun anew in June 1975.

### Publications

The following listing is of technical reports only and does not include progress reports, annual reports, board reports or planning documents.

INNOTECH Concepts. Singapore: INNOTECH, 1971

Horst, D. P. Primary School Readiness Testing: Feasibility Study.  
Singapore: SEAMEO INNOTECH Center, September 1972 (INNOTECH/PP-1/7).

Munandar, A. S. Critical Classroom Behaviors of Teachers. Singapore:  
SEAMEO INNOTECH Center, August 1972 (INNOTECH/PA1/Vol. I/1/7).

Munandar, A. S. Teacher Training in Critical Classroom Behaviors.  
Singapore: SEAMEO INNOTECH Center, August 1972 (INNOTECH/PA1/Vol. II/  
1/7).

Orata, P. J. Self-help Barrio High Schools. Singapore: SEAMEO INNOTECH  
Center, 1973.

INNOTECH Regional Practicum on Alternatives in Education. Singapore:  
INNOTECH, October 1972. AED/INI TECH Seminar on Educational Tech-  
nology. Singapore: INNOTECH, 1973.

INNOTECH Regional Seminar on Approaches to Effective and Economical  
Delivery of Mass Primary Education. Singapore: INNOTECH, 1973.

- SEAMEO/DSE Seminar on Problems of Promotion and Production of Educational Materials in Southeast Asia. Singapore: SEAMEO, 1973.
- Ellson, D. G., Chiam, T. W., & L. T. Kim Hai. The TECH Programme: A Self-instructional Programme for English Listening Comprehension - Final Report. Singapore: INNOTECH, May 1973 (INNOTECH/TP-FR/73).
- Ellson, D. G., Chiam, T. W., & L. T. Kim Hai. The TECH Programme: A Self-instructional Programme for English Listening Comprehension - the TECH Book. Singapore: INNOTECH May 1973 (INNOTECH/TPM/73).
- Tiro, A. A., Sudomo, M., Maneahindan, L. F., Prachak Deeprawat, Tran Thi Bich San. Primary School Objectives, Volume I. Comparison Among SEAMEO Countries. Saigon: INNOTECH, September 1973 (INNOTECH/PE-FR/Vol. 1/73).
- Tiro, A. A., Sudomo, M., Maneahindan, L. F., Prachak Deeprawat, Tran Thi Bich San. Primary School Objectives, Volume II. Representative Examples from SEAMEO Countries. Saigon: INNOTECH, September 1973 (INNOTECH/PE-FR/Vol. 2/73).
- Ellson, D. G., Chiam, T. W., Le Thi Kim Hai, Ishak B. Khamis, Khamis b. Noyo, & Moua Lia. Programmed Teaching: Effective Teaching by "Unqualified Teachers." Singapore: INNOTECH, June 1973. (INNOTECH/PT(E)-FR/73).
- Jasin, A. et al. Life-Skills Objectives: A Tryout. Saigon, INNOTECH, December 1973 (INNOTECH/LS-SR-73).
- INNOTECH. Selected Readings from INNOTECH. Saigon, INNOTECH, January 1973 (INNOTECH/SR-74/7).
- INNOTECH. Use of Community Resources for Providing Low-cost Primary Education. Saigon, INNOTECH, March 1973 (INNOTECH/RS-73).
- Milan-Baduel C. & Respati, B. Project IMPACT for Mass Primary Education. Saigon: INNOTECH, August 1974 (INNOTECH/IMP-PR-7/74).
- INNOTECH. Project RIT for Mass Primary Education. Saigon: INNOTECH, August 1974 (INNOTECH/RIT-PR-1/74).
- Sudijarto & Sutjipto. Setting Priorities Among Educational Objectives. Saigon: INNOTECH, April 1973 (INNOTECH/SP-FR/74).
- Bullock, Chau, Engelman, Flanagan, Hawes, Hawkridge, Homme, Nathenson, Short, Sofer & Wong. Instructional Efficiency: A Means for Reducing Formal Classroom Time. Saigon: INNOTECH, May 1974 (INNOTECH/IE-FR/74).
- INNOTECH. The Content of Primary Education for Post-war Development. Saigon: INNOTECH, December 1974.
- Nichols, D. G. The IMPACT System for Low-cost Primary Education. Washington, D. C.: American Institutes for Research, July 1975.

Seminars

- 1972      Regional Practicum on Alternatives in Education  
            AED/INNOTECH Seminar on Educational Technology
- 1973      Approaches to Effective and Economical Delivery of Mass  
            Primary Education  
            SEAMEO/DSE Seminar on Problems of Promotion and Production  
            of Educational Materials in Southeast Asia  
            Use of Community Resources in Providing Low-cost Primary  
            Education
- 1974      Primary Education for Post-war Development

## SUMMARY OF PROGRESS

SEAMEO has become a growing and functional influence on education in Southeast Asia. It has established a pattern of regional cooperation in the solution of common problems that is unique in the world. The United States Government, in giving its support to SEAMEO, also has set a pattern of excellence and effectiveness (and non-interference) that is a model for donor agencies.

INNOTECH, no less than SEAMEO, is dedicated to the improvement of Southeast Asia, particularly in education. It is responsive to the needs of the Region because it is truly a Southeast Asian center. The American Institutes for Research takes pride in its long association with INNOTECH, and we hope that the substantial success of the Center has, in part, reflected upon this association.

In 1970, INNOTECH began with no training program and no research program. Through the cooperative efforts of the regional staff and AIR advisors, both programs grew rapidly. The systems approach was applied to the design of training, and the intern program began in September of that year to be followed shortly by the first three-month training course. By June of 1975, there were more than 250 key educators who had been graduated from INNOTECH's training programs.

Research began as practical for trainees with the initiation of projects PROGRESS, ACTION, and CLEAR, although training continued to draw upon the larger proportion of professional staff time (approximately 65 percent). In 1973, with the beginnings of modular-based learning, staff training time was reduced to 25 percent and proportionately larger amounts were directed toward research. There followed our work on comparative objectives, priority setting and life-skills objectives. The problems of mass primary education were attacked in force beginning with research on programmed teaching in Malaysia, on Reduced Instructional Time (RIT) in Vietnam, and on Instructional Management by Parents, Community and Teachers (IMPACT) in Indonesia and the Philippines. IMPACT continues, and the results of both programmed teaching and RIT have great influence on IMPACT.

The strength of the INNOTECH concept was clearly shown by its ability to begin operations in Bangkok immediately after the fall of Saigon. That concept, and the faith in that concept of the Southeast Asian Region, will assure that INNOTECH will continue to seek innovative solutions to the crucial problems of education in Southeast Asia...and that it will succeed.