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**TECHNICAL  
ADVISORY  
SERVICES**

to **INNOTECH**

**SEAMEO REGIONAL CENTER**

**FOR EDUCATIONAL**

**INNOVATION AND TECHNOLOGY**



**PROGRESS  
REPORT  
OCTOBER-MARCH  
1972 1973**

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AIR-21200-4/73-PR(10)

Technical Advisory Services to  
INNOTECH  
SEAMEO REGIONAL CENTER FOR EDUCATIONAL INNOVATION AND TECHNOLOGY

Progress Report  
October 1972 - March 1973

to the  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
CONTRACT AID 490-7  
by the  
AMERICAN INSTITUTES FOR RESEARCH  
ASIA-PACIFIC OFFICE  
P.O. BOX 11-45  
BANGKOK, THAILAND

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DOUGLAS G. ELLSON  
MICHAEL B. NATHENSON

APRIL 1972

## PURPOSES OF INNOTECH

- . To create and develop new approaches to education particularly suited to Southeast Asia.
- . To supply adequate facilities and professional resources for the selection, development and testing of potentially valuable innovations.
- . To attract to the Center outstanding creative thinkers and innovators.
- . To promote and undertake research and experimentation leading to the creation of prototype solutions.
- . To train key and selected personnel from member nations to implement (1) and (4) through seminars, workshops and training courses.
- . To provide library and information services (from) world-wide sources.
- . To establish model testing and evaluation procedures and standards.
- . To co-ordinate activities with member countries' National Centers and with related SEAMEO, UNESCO or similar projects.

## P R E F A C E

This report is of the progress at INNOTECH from October 1972 - March 1973. Although the report should reflect solely the progress of the AIR contract team, it cannot do so because the work of AIR is inseparable from the work of the total INNOTECH staff. We can only hope that AIR personnel can share in the deserved recognition for the progress made at INNOTECH.

Daryl G. Nichols

Chief of Party

# I. SUMMARY

## SUMMARY OF PROGRESS

Staffing

There are currently 10 professional staff members, 3 of whom are from the American Institutes for Research: Daryl G. Nichols, Douglas G. Ellson and Michael B. Nathenson.

Staffing prospects for the coming year are excellent: (1) Nichols and Nathenson will continue at Saigon and negotiations are underway for a replacement for Ellson and (2) a recruiting trip by Mr. Ly Chanh Duc, Director, has resulted in sufficient applicants to fill all 19 vacant posts (only one or two of the present regional staff will continue in Saigon).

Research and Development

1. The TECH Programme (a self-instructional programme for English listening comprehension) has been completed, tried out with present interns and revised. At the end of March, 33 of the fifty programme units are on stencil and 16 of the units have been reproduced on cassette tapes (54 copies each).
2. Project PROGRESS: Primary Objectives of Primary Education has not been written as a final report to date. Various efforts have been unsuccessful in obtaining the report from the director of the project since he terminated his work at INNOTECH in June 1972.
3. Delivery of Primary Education: Programmed Teaching using non-professionals as teachers for first-grade reading is being conducted in ten schools in lower Malaysia. One-half of the final report has been completed.
4. Delivery of Primary Education: Planning Document for 1973-74 has been prepared and is included in this progress report.
5. Primary Education Objectives: Comparative Study of Published Objectives is almost completed. Documents from SEAMEO countries have been collected, translated and analysed. The draft final report is being reviewed in a series of meetings in the SEAMEO countries.
6. Primary Education Objectives: The Life-relevant objectives study for children who do not finish primary school has been prepared for a three-week pilot study in the Philippines. The pilot study will compare the relative feasibility of five alternative models for deriving life-relevant objectives.

7. Primary Education Objectives: The Indonesian Model for setting priorities among objectives is currently being revised by visiting experts from Indonesia.
8. Mekong Human Resources Development: INNOTECH staff assisted TROPMED, SEARCA and SEAMES in the preparation of a proposal for submission to the Mekong Committee in April 1973.

### Training

1. The 1972-73 Intern Programme continues for 16 persons from member countries. They completed formal training in December 1972 and have acted as adjunct staff members since that time.
2. A Three-month programme for educational planning, decision-making and applying strategies for change was attended by 23 participants from 1 October through 22 December 1972.
3. A new three-month programme began on 12 March 1973. It also is designed for educational planning, but it has been redesigned to permit most learning to be through self-instructional modules, with staff participation in tutorials and enrichment seminars.

### Information Exchange

1. The monthly INNOTECH Newsletter has been issued on the first day of each month.
2. INNOTECH hosted the SEAMEO/DSE Seminar on the Problems of Promotion and Production of Teaching Materials, during the week of October 30 - November 1972.
3. A Regional Seminar was held 19-23 February on "Effective and Economical Delivery of Mass Primary Education."
4. Publications:
  - (a) Self-help Barrio High Schools
  - (b) Alternatives in Education (Regional Seminar)
  - (c) AED/INNOTECH Seminar on Educational Technology
  - (d) Effective and Economical Delivery of Mass Primary Education (Regional Seminar).
  - (e) Problems of Promotion and Production of Teaching Materials in Southeast Asia (SEAMEO/DSE Seminar) (Report prepared by SEAMES)
  - (f) Seventh Meeting of the Governing Board.

Target Completion: (Reproduced from the October Progress Report; an "\*" indicates completion and an "o" indicates target not achieved on schedule.)

### Staffing

- \* December 1972 : Staffing Plans completed
- \* January 1973 : Begin recruitment for AIR Contract Team
- \* March 1973 : Begin recruitment of Regional Specialists

### Research and Development

(Comparative Objectives Study)

- \* November 1972 : Prepare Planning Document
- \* December 1972 : Collect Published Documents
- \* February 1973 : Categorize and Organize Data
- \* March 1973 : Visit to 8 SEAMEO Countries for Review

(Life-relevant Objectives Study)

- \* November 1972 : Prepare Planning Document
- \* January 1973 : Develop Methodology
- \* February 1973 : Local Tryouts

(Indonesian Priority-setting Model)

- \* November 1972 : Secure Permission to Revise & Print Model
- \* December 1972 : Prepare Planning Document

(Assessing Achievement of Objectives)

- June 1974 : Planning Document

(TECH Programme for Listening Comprehension)

- \* November 1972 : Complete Production
- \* December 1972 : Complete Tryouts
- \* January 1973 : Complete Analysis
- o February 1973 : Final Report and Prototypes to SEAMEO Centers  
/CHANGE: MAY '73/

## (Programmed Teaching)

- \* December 1972 : Complete Tryout & Revision
- \* January 1973 : Prepare for Experiment
- \* February 1973 : Begin Experiment

## (Planning Document for Mass Delivery Systems)

- \* December 1972 : Complete Initial Planning Document
- \* February 1973 : Seminar
- \* June 1973 : Final Planning Document /CHANGE: MARCH '73/

Training

## (Three-Month Programme)

- \* November 1972 : Revise Training Objectives
- \* Prepare Orientation Packages for Participant Candidates
- \* December 1972 : Complete First Three-Month Programme
- \* Send Orientation Packages to SEAMEO Countries
- \* February 1973 : Complete Revision of Programme
- \* March 1973 : Begin Second Programme

## (Ten-Month Intern Programme)

- \* December 1972 : Complete Three-month Course
- \* January - June 1973 : Participate in On-going Research and Training Programme Revisions

Information Exchange

## (INNOTECH Newsletter)

- \* Each Month : Publish and Distribute

## (Seminars)

- \* December 1972 : Invite Participants for February Seminar
- \* February 1973 : Conduct Seminar on "Effective and Economical Delivery Systems for Mass Primary Education"
- \* March 1973 : Prepare Planning Document for INNOTECH Research Based upon Seminar Results

### Publications

- \* November 1972 : Regional Practicum on Alternatives in Education.
- \* December 1972 : INNOTECH/AED Seminar on Educational Technology.  
Self-help Barrio High Schools.
- o January 1973 : Project PROGRESS: Primary Objectives of Primary Education.
- o March 1973 : TECH Programme for English Listening Comprehension. /MAY/
- \* April 1973 : Seminar on Economical Delivery of Mass Primary Education.

### National Centers/Programmes

- o November 1972 : Secure Governing Board Approval & Recommendations.  
/NOT APPROVED/

## SUMMARY OF PLANS

Staffing

- April 1973 : Complete recruitment of one additional member for AIR contract team
- April 1973 : Complete recruitment (letters and contracts) for Regional Specialists
- July 1973 : New Staff On-board (Saigon)

Research and Development

## (Comparative Objectives Study)

- May 1973 : Complete writing of final report
- June 1973 : Type
- July 1973 : Publish (Saigon)

## (Life-relevant Objectives Study)

- May 1973 : Pilot Study of 5 alternative models
- June 1973 : Preliminary analysis and draft interim report
- August : Report revision
- September : Interim Report Publication
- August 1973 : Planning for Field Study
- February 1974 : Complete Field Study
- April 1974 : Conduct Workshop
- June 1974 : Final Report

## (Indonesian Priority-setting Model)

- April 1973 : Complete Draft by Indonesian Specialists
- July 1973 : Complete review and revision
- August 1973 : Publish Final Report

## (Assessing Achievement of Objectives)

- June 1974 : Planning Document

## (TECH Programme for Listening Comprehension)

- May 1973 : Report, programme and cassette tapes distributed to SEAMEO countries

## (Programmed Teaching)

May 1973 : Complete Post tests and analysis  
 June 1973 : Final Report in English and Malay

## (Mass Delivery of Primary Education)

August 1973 : Research staff planning  
 October 1973 : Select sites for field research  
 November 1973 : Detailed project plans and schedules  
 December 1973 : Begin projects

## (Mekong Human Resource Development)

No target dates at this time

Training

## (Three-Month Programme)

May 1973 : Complete present three-month programme  
 June 1973 : Begin programme revisions  
 September 1973 : Complete revisions  
 October - December 1973  
 January - March 1974            Three-Month Programmes  
 April - July 1974

## (Ten-Month Intern Programme)

June 1973 : Complete Intern Programme

Information Exchange

## (INNOTECH Newsletter)

Each Month (except June & July 1973): Publish & Distribute

## (Seminars)

Twice Annually: Conduct Problem Oriented Seminars Tentative Date for  
 1st Seminar: 12 November 1973. Description and invitations will be sent  
 out in May 1973.

### Publications

- May 1973 : TECH Programme
- June 1973 : Programmed Teaching
- July 1973 : Comparative Objectives Study
- August 1973 : Interim Report on Life-Relevant Objectives Model
- August 1973 : Indonesian Priority-setting Model
- September 1973 : Staff Analysis for Primary Education Delivery Systems  
Research

## **II. PROGRESS AND PLANS**

## STAFFING

### Status

There are currently 10 professional staff members.

Senior Staff : Douglas G. Ellson  
Anwar Jasin  
Michael B. Nathenson  
Daryl G. Nichols  
Aurelio A. Tiro

Junior Staff : Chiam Tah Wen  
Le Thi Kim Hai  
Greta C. Librata  
Constance Peck

A/V Specialist : Cecil Rasanayagam

INNOTECH has received applications from all SEAMEO countries except Singapore. Some letters of appointment (with contracts) have been sent out and the remainder will be sent out in the coming two weeks. These applications are sufficient to cover INNOTECH's regional staffing needs for the coming year, and most applicants have indicated a willingness to stay on the staff for two years (important for continuity of our programmes).

There are a total of 19 professional posts to be staffed by regional specialists, and only one or two of the current staff will be going to Saigon. The likely breakdown of regional staff by country is as follows:

	Senior	Junior
Indonesia	1	1
Khmer	1	1
Laos	-	1
Malaysia	-	1
Philippines	2	-
Singapore	-	-
Thailand	2	1
Vietnam	4	4

In addition, the Centre has sent a letter of appointment to a senior professional in Indonesia to serve as Deputy Director. Contact has also been made with a Filipino to serve on the Administrative Staff as Editor.

Our greatest fear in previous programme planning was that all our plans would come to naught without an adequate regional staff. It now is clear that we will be staffed from the region, and perhaps something has been learned about procedures for securing regional staff members:

Step 1. At its Seventh Meeting held in Singapore, November 14-17, 1972 the INNOTECH Governing Board adopted the following recommendation (among others):

Recognizing the importance of the projects assigned to INNOTECH in the Proposed SEAMEO Educational Development Plan for the 1970's and the expanded INNOTECH training and research programmes, the INNOTECH Governing Board wishes to call attention to the urgent staffing requirements for carrying out this work and urges the members of the Council, in the spirit of the Council's resolution passed at the Seventh SEAMEC in Saigon, to lend full support to requests for release of qualified specialists to meet these staffing requirements. The following resolution is proposed for adoption by the Council:

That SEAMEO Ministries of Education increase their efforts to identify and make available to the SEAMEO Centres qualified specialists for professional staff positions, and will make arrangements for release of individuals selected by the Centre concerned.

Step 2. This resolution was adopted in January at the SEAMEC Conference in Phnom Penh following the presentation of a paper on "INNOTECH'S STAFFING NEEDS" by Mr. Ly Chanh Duc. At this same conference, Mr. Duc and Mr. Nichols talked personally with the majority of the Heads of Delegations (usually Ministers of Education) in an attempt to inform them of how crucial the provision of regional staff would be to the success of the Centre.

Step 3. A letter was sent to all Ministries requesting that applicants be identified for personal interviews by the INNOTECH Director at a later date. The paper on Staffing Needs was enclosed as was other pertinent information about INNOTECH, including copies of the Newsletter.

Step 4. A cable was sent to each Ministry two weeks in advance of the Director's visit, giving date of arrival and schedule.

Step 5. The Director visited each country (except the Kimer Republic) to interview prospective candidates.

Of the present AIR staff, Mr. Nichols and Mr. Nathenson will remain with the Centre next year. Several applicants have been interviewed in the States, and we expect one to be selected shortly.

The Vietnam government has agreed to provide housing for Canadian University Service Overseas (CUSO) personnel working at INNOTECH. We are quite sure of obtaining an editor (and possibly a research advisor from that source). We will also offer an editorial position to a Filipino who will be considered an administrative staff member.

A request has been submitted by the French Embassy for an educational researcher or a cost analyst. We are quite sure of obtaining help from this quarter for 74-75 if not before.

We are submitting a request to CEDO for someone to teach programmed instruction (needed in our research programme to develop self-instructional primary education materials for use in delivery system tryouts).

We will follow up with the Australian High Commission in an attempt to get Mr. Braithewaite from McQuarrie University.

Targets:

- April 73 : Follow up letter to CUSO
- Letters and contracts to regional staff applicants
- Visit to Australian High Commission re Braithewaite
- Letter to CEDO
- May 73 : AIR staff member selected
- July 73 : Possible visit to CEDO.

### Evaluation:

The staff that we have had at the Centre this past year has been on the whole, very functional. Both research and training are in excellent shape.

Dr. Tiro has taken complete responsibility for the Comparative Objectives study, having maintained a schedule which will insure completion by 1 June.

Mr. Jasin has directed the Life-Skills Objectives project, both in its design and its execution. The results of the five models which will be tried out in the Philippines will be given a preliminary analysis before his departure on 15 June.

Dr. Ellson will complete two projects. The TECH programme for upgrading the comprehension of spoken English will be sent to all SEAMEO countries in May. The Programmed Teaching study for beginners in the reading of the Malay language will be completed by 8 June. Well done on both counts. He has been assisted by Miss Kim Hai and Mr. Chiam.

Mr. Nathenson has put together an exciting 3-months training programme that is primarily self-instructional. He and his staff are to be complemented. Mrs. Peck has assisted full-time.

The 16 interns have been assigned as adjunct staff members to the five activities above, and they typically have done quite well. (See the section in this report on the 10-month Intern Programme.)

Recruitment of new staff exceeded expectations.

# RESEARCH AND DEVELOPMENT

## - CONTENTS -

1. TECH Programme for English Listening Comprehension
2. Project PROGRESS : Primary Objectives of Primary Education
3. Development of an Effective and Economical Delivery System for Mass Primary Education
  - ... Study A : Programmed Teaching
  - ... Study B : Planning Document for 1973-74
4. Development of Instructional Objectives for Primary Education by SEAMEO Member Countries
  - ... Study A : Comparative Study of Present Objectives
  - ... Study B : Deriving Life-relevant Objectives
  - ... Study C : Indonesian Model for Priority-setting
  - ... Study D : Assessing Achievement of Objectives
5. MEKONG Project : Human Resources Development

## 1. 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.

The initial aim in developing the TECH Programme was to provide an economical means to train participants in INNOTECH's Training Programmes in the comprehension of spoken technical English. A secondary aim, introduced during the development of the programme, was to provide an introduction to the content of the INNOTECH curriculum.

Although English is the announced medium of instruction in INNOTECH training programmes, a significant proportion of the participants fail to gain full benefit from these programmes because of inadequate proficiency in English. Although all participants from the non-English speaking SEAMEO countries have had sufficient training in English to converse in that language when they first came to INNOTECH, a high proportion have difficulty in following lectures or in taking part in discussions at the required technical level. For approximately half of the trainees test scores indicate that further training in English is necessary before participation in programmes such as INNOTECH's can be fully effective. A similar problem is encountered in all of the SEAMEO Centers, and the problem is, of course, world-wide: it is common to thousands of students who go abroad to study in a language not their own.

The problem was discussed at length at the 7th SEAMEC Conference held in Vientiane in January 1972, and it was recommended that all of the SEAMEO Centers should provide, "for those participants who need it, an intensive 2 week course in English before the commencement of the training/research programme, as well as arrange for the tutoring in English of such participants during the first two weeks of their courses. Further, SEAMES was instructed "to explore the feasibility of providing funds to meet the costs for board and lodging incurred in the two-week intensive courses in English for participants at the Centres."

For a number of reasons the proposal was not feasible. Funds were not available to meet the costs of holding the proposed training programmes at the Centers, qualified instructors were not available at some Centers, and experts questioned the effectiveness of a course lasting only two weeks. One alternative, to utilize existing language centers to train participants before they departed from their home countries, had other disadvantages. Few training courses of the necessary type and level were offered; schedules did not match those of the Centers and some of the courses required as much as 9 months full time work: few courses were available outside the capital cities and, of course, many of the participants come from outlying areas.

A feasible alternative appeared to be a self-instructional programme which would minimize staff requirements and which could be administered anywhere at the convenience of the user. The fact that a suitable programme was not available readymade was not necessarily a disadvantage: a programme developed locally to solve the immediate problem could be tailored to the special needs of the participants and the Center involved. In particular the content of the programme could be designed to combine an introduction to the Center's curriculum with the required training in English comprehension.

In consequence the TECH Programme was designed to provide:

- a. self-instruction in comprehension of oral technical English
- b. an introduction to material in the INNOTECH curriculum
- c. portability and
- d. economy

Summary Description: (Development Procedures)

The programme was developed in three phases, each involving a significant revision of the procedural and content programmes.

Phase I: April - June 1972. Small scale tryout of a preliminary form of the programme. Exploratory work was begun as a training project carried out by eight of the 1971-1972 group of INNOTECH interns.

Considerable motivation was provided by one of the interns, Mr. Tea Meng Tech, Inspecteur Primaire, Direction de l'Enseignement, Khmer Republic. Mr. Tech had previously developed a similar programme for his own self-instruction based on radio broadcasts in standard and Special English.

The initial work of the interns produced a preliminary operational programme (specification of the learning procedure) and a format for the teaching materials. The materials for each lesson or unit consisted of a short talk and oral questions concerning it reproduced on a cassette tape, together with a booklet containing the same questions in printed form, a printed transcript of the talk, and instructions specifying the step-by-step procedure. On the basis of a tryout in which the interns served as experimental subjects the operational programme was simplified. The tryout also indicated that initial estimates of the appropriate length for recorded passages and the difficulty level of the questions were too high.

Phase II: September 1972 - February 1973. Development and tryout of the revised operational programme and a 50 unit content programme.

On the basis of the initial tryout and other considerations the operational programme was simplified and a 50 unit content programme (syllabus and the material required to teach it) was written. The new programme was given to 15 of the 16 members of the 1972-73 group of interns, beginning in September, shortly after their arrival at INNOTECH. (One member of the group who had had almost no training in English before coming to INNOTECH declined.) The 50 units, each of which required a maximum of 1 hour's work, were completed in approximately 90 working days over a 4-month period.

A number of changes were introduced in the programme during this tryout. The full set of programme materials was not completed before the tryout began: materials for later programmes were being selected and questions written as earlier units were being administered. The performance and comments of the learners and experience in writing questions indicated that 8 good questions could not be derived from the available texts which met the remaining criteria of length and technical level. Consequently, after the 20th unit the number of both essay and multiple choice questions was reduced from 8 to 5.

Initially the programme included oral questions recorded on the tape, with the same questions repeated in printed form. After experience with a few units the oral forms of the questions were eliminated together with the procedural steps which utilized them. The operational programme was also simplified in other minor ways.

Phase III: February - April, 1973.

Final Revision. This phase was begun after all interns had completed the 50 units. A final revision was based on a detailed critical analysis of the entire programme and an item analysis of errors and their frequency. Here the performance of the English-proficient participants provided useful information concerning the difficulty of questions and text content.

Revisions include

- (a) re-ordering of the units,
- (b) elimination of 3 unsatisfactory units and the inclusion of the beginning of the programme,
- (c) reduction of the number of questions from 8 to 5 in all units,
- (d) revision of the instructions,
- (e) revision of the printed format,
- (f) editing of questions and texts, and
- (g) elimination of discrepancies, mostly typographical, between the oral and printed texts.

After elimination of oral questions, no major changes in the operational programme were found necessary.

(The TECH Programme)

The programme which resulted from this process of development consists of 50 units, of material in the area of educational development in Southeast Asia, the systems approach, innovation and educational technology. The texts were selected from material in the INNOTECH file and library, chiefly selections from technical articles and reports given at seminars and other meetings. These were recorded orally on tape in a variety of voices of native English speakers, both men and women, with British and American accents. They were read so as to simulate a seminar or lecture presentation but rather more slowly and distinctly. The criteria used

to select the material were:

- a. Subject matter area: The area defined by the curriculum of INNOTECH training programmes and topics in closely related fields, especially topics of general interest.
- b. Subject matter level: Introductory tertiary, suited to interested non-specialists such as university students entering the field or professionals in related fields.
- c. Language level: Tertiary - Assume secondary-level training in English and relatively large reading vocabulary. Suited to the educated non-specialist: technical terms and concepts introduced, explained and defined in non-technical language.
- d. Coherence and unity: The material should be complete and understandable in itself, with minimal dependence on special knowledge or context from previous units. Units may, however, be parts of a larger whole such as that represented by a series of units on the same or related topics.
- e. Content: Sufficient material and specificity to permit the formulation of 10 clear and answerable questions.
- f. Length: 2-8 minutes or oral presentation, 200-800 words.

Questions were constructed with the aim of establishing useful listening comprehension and study habits.

Although questions on specific detail were not excluded, comprehension rather than memorization was emphasized.

In addition to those requiring reproduction of detail, questions were included systematically to require comprehension of the following kinds:

- a. Identification of the main theme or thesis of the text, the author's aim, attitude, bias or emphasis. (Care was taken that questions of this type could not be answered from the title of the unit. In many cases an obviously descriptive title was replaced by a general or noncommittal one to avoid giving away an answer to this type of question.)

- b. Analysis of hierarchies and outline.
  - 1. Listing of major topics or sub-headings
  - 2. Distinguishing main and sub-topics
  - 3. Relating major points to illustrations and examples
  - 4. Giving examples and applications of generalizations, from within or outside the text.
- c. Identification of cause and effect relationships.
- d. Interpretation:
  - 1. Summarization
  - 2. Identification of word-meanings from context
  - 3. Classification
  - 4. Comparison (similarities, differences)
  - 5. Illustration, exemplification.
- e. Translation (of words, idioms, phrases, sentences)
  - 1. Production of synonyms, equivalent terms, phrases, etc.
  - 2. Definition
  - 3. Explanation.

Each unit consists of a short oral passage recorded on a cassette tape, supplemented by printed material which includes questions, answer keys, a transcript of the recorded text and step-by-step instructions. Answers to the questions are recorded on expendable answer sheets, one for each unit. The format was especially planned to fit the requirements of the operational programme. The overall programme is conveniently described under two headings, which represent those aspects of the programme which control the how and the what of learning. The operational programme specifies how - it is the procedure which the learner follows in completing each unit of material. The content programme is the sequence of learning material and tasks which largely determine what the student learns.

Details of the two aspects follow

a. Operational programme (see Figure 1)

The operational programme, which is the same for each unit, is essentially a study guide in the form of a seven-step branched programme based on the brightening model. The brightening model begins with a test, which presents the task to be performed in its most difficult form. If the learner can not perform the task it is made progressively easier, by repeating or elaborating the instructions, presenting the task in a simpler form, by providing additional information, etc., until the learner succeeds; at this point the learner is presented with another task which is similarly simplified if he can not perform it. The brightening model, also known as the "discovery method" is the inverse of the fading model and the conventional teach-then-test classroom procedures which favor learning by rote rather than by problem-solving.

In each unit of the TECH Programme the initial task is a relatively realistic representation of the situation the student is being trained to face -- he listens to a single presentation of oral material presented once, after which he is required to demonstrate that he understood what he heard by answering essay-type questions about it. If he fails, the task is progressively simplified by allowing him to listen again, by substituting multiple choice questions and by allowing him to read a transcript of the oral material. The procedural programme which specifies the steps in this process in detail is summarized in Figure 1.

b. The content programme (see Figure 2)

The content of the 50 units is suggested by their titles, which are listed in Figure 2. Eight voices of native English speakers are used, 6 American, 1 Canadian and 1 British. The recorded selections range from 2 to 8 minutes in duration. In addition to the recorded selection, each unit includes a set of 5 essay questions, 5 multiple-choice questions, answer keys and the printed text of the recording.

Figure 1

The Operational Programme:

Summary Instructions for Each Unit in the TECH Programme

- STEP 1 :** Listen to the tape once, without interruption.  
Take notes if you wish.
- STEP 2 :** Answer the 5 essay questions (QA).
- STEP 3 :** Listen to the tape again, several times if necessary, and  
revise or complete your answers to QA.
- STEP 4 :** Mark unacceptable answers to QA, using the answer key.  
If you made no more than one error, go to the next unit.  
If you made two or more errors, go to STEP 5.
- STEP 5 :** Answer the 5 multiple choice questions (QM).
- STEP 6 :** Mark unacceptable answers to QM, using the answer key,  
If you made no more than one error, go to the next unit.  
If you made two or more errors, go to STEP 7.
- STEP 7 :** Read the text as you listen to the tape again. Use an English  
or dual-language dictionary if necessary. Find the answers  
to QA and QM questions that were marked incorrect. On your  
answer sheet, write the numbers of the lines in the text on  
which you found each unit.

Figure 2The Content ProgrammeList of TECH Programme UnitsIntroduction

- Unit 1: Practice Unit: How To Be a Better Minister of Education
- Unit 2: Educational Technologies
- Unit 3: Technologies and Systems

Innovation

- Unit 4: A New Approach
- Unit 5 and 6: Educational Developments in Southeast Asia: Methods of Change

Systems Approach

- Units 7 and 8: Introduction to the Systems Approach
- Unit 9: The Systems Approach

Instructional Objectives

- Units 10-12: Instructional Objectives

Alternatives

- Unit 13: Alternatives in Education

Educational Technology

- Units 14 and 15: Educational Technology

Educational Television

- Units 16-18: What the Research on ETV Says
- Unit 19: Which Medium
- Units 20-21: Television Reconsidered
- Units 23-25: Review of Schramm: "TV Reconsidered"
- Unit 26: Educational Television in Singapore

Programmed Learning

- Units 27-34: Characteristics of Programmed Learning
- Unit 35: The Pacific Horizons Reading Scheme

Evaluation

- Units 36 and 37: Introduction to Evaluation in the Systems Approach
- Units 38-43: Evaluating Training and Development Systems

Objectives

- Units 44-48: Defining Objectives for Six Varieties of Learning

Teaching Principles

- Units 49-50: Aptitudes or Specific Skills

Progress: A draft of the report has been completed.  
All of the material is in final form for reproduction, including a master tape and corrected texts.

Text material for 33 units has been stencilled and 24 units have been given a final proof-reading.

54 copies of each of 16 units have been recorded on cassettes.

Targets: April 15  
Completion of final report

May 1  
Completion of recording on cassettes  
Completion of printed material, including reproduction

May 7  
Mailed

Evaluation: Evaluation of the programme is based primarily on the performance of 15 INNOTECH interns of the 1972-73 group, who completed the 50 units in the 4-month period between September 27, 1972 and January 23, 1973. This validation group was not limited to those with deficiencies in English: scores on the Michigan Test of Aural Comprehension, administered during the week preceding the start of the programme ranged from 20% to 98%. Of these, scores for nine interns were below 80%, indicating, according to the test manual "considerable handicap in understanding spoken English." Scores for seven of the nine were below 70%, which the manual interprets as follows:

Students in this range are not ready to undertake academic work in an environment where English is the medium of instruction. Those at the upper limit of this range may know enough English to travel, but they will not ordinarily be able to go into academic work until they have devoted some time exclusively to the study of English.

The effectiveness of the programme was evaluated in terms of (a) improvement in the performance of the experimental group on the 50 programme units, (b) gains on the Michigan Test compared with gains achieved by a control group consisting of the interns of the previous year, 1971-72, and (c) reactions of the interns in the validation group.

Performance on the programme units is evaluated in terms of errors on essay questions only. Results obtained for multiple choice questions were not meaningful since the number of subjects responding to these questions was not constant. Multiple choice questions are answered in the course of the programme only if the learners make two or more errors on the essay questions.

The number of errors shows a progressive decrease throughout the programme (see Figure 3). Variability from unit to unit may be attributed to differences in the difficulty level of unit content or questions. There is some evidence that the improvement indicated by the general trend of the data in Figure 3 is under-estimated. Units 6 and 46, starred in Figure 3, were given under special test conditions to insure comparability. Early in the programme it was discovered that some of the participants were deviating from the instructions. In order to increase their scores on what some persisted in viewing as an examination rather than a teaching device, some of the participants habitually stopped the tape to provide additional time for note-taking, listened to the tape several times or even referred to the answer key before answering the essay questions. To demonstrate the effects of these practices, the essay questions of Unit 6 were presented to the participants as a group under the conditions prescribed by the programme, i.e., they were required to answer the questions after a single uninterrupted presentation of the recorded passage. As Figure 3 shows, the percentage of errors increased from approximately 20% on Units 1-5 to 50% on Unit 6. Errors on Unit 46, administered three months later under similar test

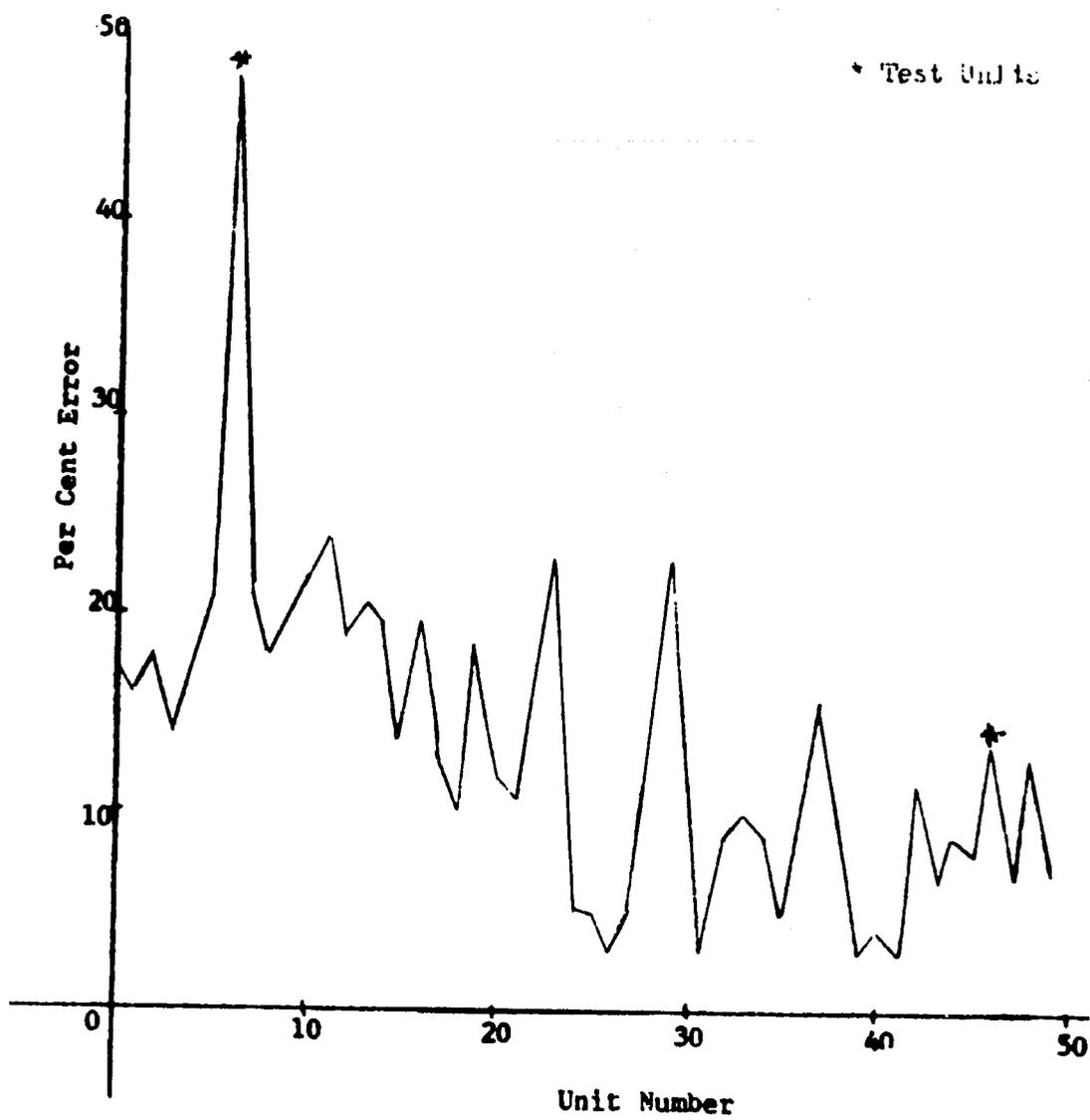


Figure 3

Progress Indicated by Per Cent Error on Essay Questions

conditions did not show a comparable increase. The improvement indicated by the relative performances on these two controlled tests is considerably greater than that indicated by the scores on other units obtained under less controlled conditions.

The second form of evaluation is based on pre- to post-test gains on the Michigan Test of Aural Comprehension. One form of the test was given to both groups when each first came to INNOTECH and a second form was given approximately 4 months later, in February. The experimental group, 15 interns at INNOTECH in 1972-73, completed 50 units of the TECH Programme in the interval between the two tests. In the control group, which consisted of 13 interns of the previous year, seven interns with pretest scores below 70, (indicating a serious deficiency in English) were given a special English-language training programme. This programme is summarized in the AIR "Report of the Technical Advisory Services Provided to INNOTECH", January, 1972, p. 8:

INNOTECH attempted to solve the problem by holding sessions for the complete group (of 16 interns) in the morning and then splitting the group in the afternoon. The "English-training" group (seven interns) reviewed the morning sessions and worked on English-training exercises developed from basic INNOTECH reading while the "English-proficient group" began work on projects.

... one staff member was occupied full-time with the English programme.

Pre- to post-test gains are shown in Table 1 for the total groups and separately for those subjects whose English was deficient as indicated by pre-test scores below 70. In both comparisons gains were greater for the experimental group, but gains for the total groups differed only slightly. For those whose

Table 1

Pre to Post-test gains on the Michigan  
Aural English Comprehension Test

	<u>Experimental (1972-73)</u>				<u>Control (1971-72)</u>				<u>Diff.</u>
	N	Pre	Post	Gain	N	Pre	Post	Gain	Diff.
Total Group	15	69.7	75.6	5.9	13	73.1	77.2	4.1	1.8
English-deficient	7	50.3	65.7	15.4	6	58.7	65.9	8.2	7.2

English was deficient, gains for the TECH-trained group were nearly twice those for the control group. However, the number of cases was small and the difference was not statistically significant.

Less objective evidence is provided by the attitudes of the participations in the programme whose English was deficient. With the exception of two who appeared not sufficiently motivated for self-instruction their evaluations were favorable. Seven have purchased the necessary cassette tapes and had copies made for their own use. Others whose English was adequate have requested copies of the printed texts and questions.

The available data do not provide conclusive evidence for the effectiveness of the TECH Programme. In the judgment of most participants the programme was valuable for training in both language skills and subject matter. Performance on the programme itself showed progressive improvement but only part of it can be attributed to the programme, since the learners were simultaneously participating almost full-time in an English-language environment. The relatively large difference in favor of the TECH Programme group in the experimental comparison is more convincing, but the number of cases was too small for the difference to be significant. A more extensive validation study is indicated. However, in both cases the data are consistent with the conclusion that the programme improves the comprehension of technical English. It was at

least as effective as the conventional programme used at INNOTECH in the previous year. The traditional programme required classroom space and occupied the time of one professional staff member for a period of five months. To administer the TECH Programme requires only the part-time services of a clerk.

Thus, there are a number of indications that the programme is effective in teaching both English comprehension skills and curriculum content, and that it is at least as effective for achieving these objectives as a conventional programme with much greater manpower and space requirements.

2. 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 this will involve statistical comparisons among certain stratifications such as rural or urban, primary or secondary, medium of schools, sex, ethnicity and social class.

Targets: Complete writing of final report & reproduce and distribute report. (No date possible. See below.)

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. Numerous personal contacts, letters and phone calls have yet to elicit a report.

Evaluation: None can be made at this time.

### 3. Development of an Effective and Economical Delivery System for Mass Primary Education

Overall Purpose: Conduct studies which will assist SEAMEO countries in the development of effective and economical delivery systems for mass primary education.

#### Study A: Programmed Teaching

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

- ... Develop and tryout 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 locus 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 are being 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?

The research is being undertaken in ten rural elementary schools in the Pontian (Johore) district of Malaysia. To maximize the homogeneity of the language background of the pupils, only Malay stream schools were selected. A sample of 100 children was chosen to represent the lower half of the first grade population as measured by teacher ratings and a specially constructed readiness test. They are given one-half hour daily instruction daily by the programmed teachers in addition to their regular period of instruction in Bahasa Malaysia. Matched controls from the same classrooms receive a corresponding period of additional instruction by their regular teachers.

The programmed teachers were given approximately 16 hours of formal training supplemented by on-the-job supervision. The duration of the experiment is three months, including approximately 60 teaching days. Performance of the children will be evaluated at the end of this period by individual and group tests designed to evaluate material taught by both the supplementary and the regular teacher.

The teaching is being done by five supplementary teachers and one supervisor, all of whom are graduates of the local elementary schools with no additional training beyond that provided in the experiment. Research personnel include Mr. Chiam Tah Wen and Miss Le Thi Kim Hai from the INNOTECH staff, Mr. Khamis Noyo, Mr. Ishak bin Khamis and Mr. Moua Lia, INNOTECH interns, and Dr. D.G. Ellson, advisor.

**Progress:** Teaching began January 29 after 3 days (8 hours) of training 8 additional hours of training were given during the next two weeks. Since then INNOTECH personnel have visited Pontian for observation of teachers one or two days weekly. Some additional training has been necessary because of changes in the programme.

A revised version of the operational programme has been written and errors have been corrected in the content programme. The revised programme is reproduced in the form of a Teacher's Guide in both English and Malay versions.<sup>1</sup> The English version will be included as an appendix to the final report.

**Targets:**

- March 30: Complete draft of Post-test. This will consist of a 1-hour, 60-item group test and a 15-minute, 30-item individual oral test.
- April 13: Post-test printed.
- April 30: Report completed in English, exclusive of results section Malay and Lao translations completed.
- May 4 : Train interns in administration of post-test.
- May 6 : Train teachers (Pontian) in administration of post-test.
- May 7-10: Administration and scoring of group test.
- May 14-17: Administration and scoring of individual test.
- June 15 : Report completed, English, Malay and Lao versions.

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1. See Appendix for Teachers Guide (English Version) plus a sample page in Malay.

Evaluation: The results will provide answers to two questions. The first question ("How feasible is the use of rural elementary school graduates as programmed teachers?") can already be answered in the affirmative. Their performance is more than satisfactory and unquestionably equal to that observed elsewhere. One indication of the quality of these programmed non-professional teachers was obtained from a training session discussion, in which they made suggestions concerning possible modifications of the teaching procedures. Their criticisms, which showed a good understanding of the programme and its underlying aims, have provided the basis for significant revisions made during the third week of the experiment.

The second question ("How well do children learn?") can not be answered until after the post-tests have been given. It is hoped that the results will identify a new tool for the economical and effective delivery of primary education in the SEAMEC countries. A full account of the experiment will be completed about June 15 and issued as an INNOTECH report.

The project has maintained its original schedule.

SETTING PRIORITIES FOR INNOTECH RESEARCH  
ON THE DELIVERY OF MASS PRIMARY EDUCATION

Background

In February of this year INNOTECH held a regional seminar on "Effective and Economical Delivery of Mass Primary Education." The information and ideas gained from that seminar have been extremely helpful in giving added direction to our research planning.\*

The remainder of this paper will consider various aspects of the problem of primary education in the region and of potential means of delivery as bases for outlining what we currently consider as the most likely delivery concept to be used as a framework for INNOTECH research.

Schools, teachers, classrooms textbooks etc., describe the traditional system which, traditionally, has failed to provide universal primary education. Can this system be expanded (essentially doubled) to provide places for all children? It seems patently clear that it cannot be expanded without increasing the budget proportionately - an impossibility. Effecting economies within the present system can have little impact because primary education in most SEAMEO countries already is about as economical as the traditional system will permit. Teachers are notoriously underpaid, school buildings often are erected voluntarily by the community, textbooks are in extremely low supply, etc. There are few additional economies which can be found within the traditional system, and these probably would affect the quality of education which is already highly suspect.

If there is an answer to the problem, the answer has to lie in innovation: some alternative to the traditional methods of primary education. INNOTECH, thus, should focus its research on innovative approaches and on only those innovations which, at the outset, have the potential for dramatic cost reductions.

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\* We are indebted to Miss Carol Sissons, University of Western Ontario, for her extremely competent summary of seminar results which she has combined with other reported research in a working paper on alternative models for delivery of primary education.

## Newspaper Clipping

## NO MORE SCHOOLS?

Vientiane, January 1980

Primary schools throughout Laos are closing! School bells no longer ring. On visits to three isolated villages during the past week this reporter did not see one class in session. In response to my questions about the cause of this calamity, I received tolerant smiles from villagers and was told time and again that "our concern is not with schools, it is with the education of our children."

What has happened in Laos and in other countries in Southeast Asia is a revolution in education. Seven years ago, budgets of these countries were strained simply to provide education for one-half of primary age children; today, even in remote villages, essentially all children are receiving primary education. The concept that has brought about this revolution is the one voiced in my recent visits to Lao villages -- "our concern is not with schools, it is with the education of our children." A totally new system of primary education has been based upon this concept, and it represents a dramatic departure from the familiar and traditional primary school classes of my own youth.

How did this new system come about? It started with the Southeast Asian Ministers of Education Organization (SEAMEO), a cooperative effort on the part of eight countries in Southeast Asia to pool their resources in an attempt to solve pressing educational problems common among the countries of the region. The organization, in planning for the future, documented its planning under the title of "Educational Development Programmes for the 1970's",

and a high priority was assigned to the development of an effective and economical delivery system for mass primary education. The 1970's have passed, and the "no school" education which I recently saw in Lao villages is the outcome of SEAMEO's far-sighted planning for the 1970's.

#### MOA LIA GOES TO "NO SCHOOL"

Moa Lia is the 10-year old son of a farmer in the small village of Bouamlong. In questioning him, his parents, the district education inspector and others in the village I was able to piece together the following picture of the educational revolution through the eyes of those who are taking part.

Q: Moa Lia, what grade are you in?

Moa Lia: I don't know.

Father: We don't have grades or classes any more. Moa Lia, tell him what modules you have completed.

Moa Lia: In Language I have completed module 23, in Science module 17, in Mathematics 15, in Social Studies 12, and in Applied Projects 28.

Q: I don't quite understand. What is a module?

Moa Lia: It is a learning unit that usually takes me about a week to finish.

Q: Is it a chapter in a textbook?

Moa Lia: No, I don't have any textbooks. A module can be lots of things. Most times it is a self-instructional booklet of about twenty pages that I can do by myself. Of course, I do have to ask somebody to help me sometimes. Other times a module might ask me to work with a shopkeeper, or a carpenter or even the village headman. Once a bunch of us helped the district health officer on a project to drain water from some areas to get rid of mosquitos.

Q: Why don't you use textbooks?

District Inspector: We found that it would be a lot cheaper to have modules because we don't need so many. For example, once Moa Lia finishes a module he turns it in and somebody else can use it. Having a textbook is like carrying around twenty or thirty modules, even though a child can only read in one chapter at a time. Moa Lia, let him see your Science module 18.

(Science module 18, as I examined it, most certainly was not a textbook. In the first place, the pages were fairly thick — probably some kind of plastic. I was told that much money was saved because the plastic pages allowed the module to be reused many times without deterioration. It could even be cleaned up after being dropped in a puddle of water — boys will be boys in any country. The content of the module was in the Lao language and I couldn't read it, but it clearly was a lesson on the human heart, and it included a number of three-color pictures. There wasn't much of the usual textbook about it. Obviously, it was some form of programmed instruction with places for Moa Lia to answer and to check his own answers. Pretty sophisticated stuff for a ten-year old.)

Q: Moa Lia, isn't a module like this difficult for you to do?

Moa Lia: I have to work hard, but I know what to do and I can ask for help if I need to. I had to learn to read first and then I had to "learn how to learn", that is, I had to learn how to use each module.

Father: I never went to school, but I know what Moa Lia should be doing at any time. Even though I don't always know what it is he is learning, I know the steps he is supposed to follow. All the parents in this village, thus, can help

their children on how to learn. We also can keep track of what they are doing and, because they are our own children, we are responsible for their progress. Moa Lia also is responsible because we both know that both he and our country will benefit from his learning.

Q: Moa Lia, you said that you have "learned how to learn." What do you mean?

Moa Lia: Everytime I pick up a new module, I listen to a cassette tape while previewing the module. I can listen to it as many times as I want until I am sure of what to do.

Q: Aren't cassette tapes expensive?

District Inspector: There are two inexpensive cassette players in the village and each module has only one cassette. The two cassettes are necessary in case one breaks down and has to be repaired. They are a lot cheaper than a teacher.

Q: Moa Lia, you also said that you had to learn to read first. How did you do that? You couldn't have learned from a module like this one on the human heart.

Moa Lia: Even before learning to read, I had to learn to speak.

Q: I don't quite understand.

Moa Lia: Most of the kids here grow up speaking Meo. We only know a few words of Lao when we start primary education.

Q: How did you learn to speak?

Moa Lia: When I was about six years old, I started listening to some radio programmes which taught Meo kids how to understand Lao.

Father: We have four or five transistor radios in the village. Much of the time they are used by younger children in learning Lao, but there are also adult programmes which we listen to. I have made several changes on the farm after listening to agriculture programmes.

Q: Moa Lia, so you learned to speak only by listening to the radio?

Moa Lia: No, but the radio helped me get started. Some 8 to 10 of us had a class in the main house of the village where we listened to special cassette tapes. Some of the kids parents who spoke Lao also helped us out.

Q: Did you have a teacher?

Moa Lia: Not really. The same parents helped out; some of the older kids also helped us.

Q: Then you learned to read?

Moa Lia: Yes, but we had to pass a listening test first to make sure that we knew enough to learn to read.

Q: Who gave the test?

Moa Lia: The Instructional Supervisor was here one day and gave it. Sometimes parents or older kids give it.

District Inspector: The Instructional Supervisor (IS) is the professional who manages the whole primary system here. The IS for this village also is responsible for two other villages in the district and makes regular rounds of the villages.

Q: I would like to find out more about the IS. But first, Moa Lia what happens if you don't pass the listening test?

Moa Lia: They find out what we do and don't know, and parents and older kids coach us.

Q: How long did it take you to learn to speak and understand spoken Lao?

Moa Lia: About four months; it was fairly easy. Some kids take one or two years because they weren't able to learn it full time; they had to help their fathers.

Q: OK, once you learned to speak, how did you learn to read?

Moa Lia: By programmed teaching and by modules which I could take home.

Q: What is programmed teaching? Is it a special method that your teacher uses?

Moa Lia: The person who taught us wasn't really a teacher; it was a parent who had graduated from primary school and could read.

Q: Not a teacher?

District Inspector: Moa Lia is right. The people who act as teachers here are not graduates of a TTC, and they only have a primary education. In this village, for example, three members of the community have volunteered to work part-time in the programmed teaching programme for reading. They are paid by the hour at a rate of about one-third of what it would cost for a teacher who had graduated from the TTC. We give them two weeks of specialized training in very specific techniques for teaching reading. Two older children who are in approximately their last year of primary education also have become programmed teachers. All older children are required to spend time in helping younger ones learn different subjects, quite often by individual tutoring. This scheme has been very successful. Not only do the younger children learn quite effectively, but the older students also report that they themselves have learned a lot by teaching others. Because these villages have very little money, the free time given by older students in the teaching of the younger ones represents real savings. Before we had the new system, any teaching had to be done by a qualified teacher who was paid a regular salary, and there was no way that this village could afford to pay a full-time teacher. In several places in my district military servicemen fulfill some of the teaching aide functions.

Q: During all the time that we have been talking today, I have yet to find out what the school teachers do.

Moa Lia: We don't have any — just some of the parents and older kids.

District Inspector: Moa Lia is right. Under the new system we don't have teachers and classes and textbooks in the same way that we used to. We simply cannot afford it.

Q: But I have seen some fairly sophisticated instructional materials — learning modules, transistor radios and cassette recorders. How can you afford these things?

District Inspector: For the simple reason that we do not have teachers. Traditionally, more than 80 per cent of education costs have been teacher costs — salaries, retirement, training, etc. The most revolutionary change made by the SEAMEO primary education system was to eliminate the use of professional teachers who were tied to the classroom and to retrain them to become Instructional Supervisors. The usual student-teacher ratio in the past was 35:1. Our present student — Instructional Supervisor ratio is 200:1. The IS's make a much better salary than they did as teachers, but we still have realized at least a four-fold savings in teacher costs. The money we have saved in this way is used for instructional materials of various kinds and to pay modest stipends to local instructional aides (community members with special skills).

One other benefit of this new scheme has been our ability to retain good IS's in the rural communities. We had a very difficult time in the past in attracting and keeping good teachers in the villages. The increased responsibility, prestige and income of IS's seems to have played a big part in making rural education more attractive to top people.

Q: I now have a fairly clear idea of the kinds of learning experiences which children such as Moa Lia have under the new system. I also understand to some extent how the community draws upon its own resources to assist in primary education. But, I am not clear exactly what part the Instructional Supervisor plays in all this.

District Inspector: Throughout my district, each IS has the responsibility for about 200 primary children. In some of the larger towns there are two or three IS's. For small villages such as this one, however, there is only one — and he is responsible for two other villages as well.

In larger towns, an IS will have an office in a permanent learning centre. Here, however, the learning centre is mobile. The IS travels in a small van which is his mobile learning centre.

The learning centre is the hub of the primary education system. It contains the appropriate learning modules, the cassette instructions for each module, tests for each module, instructional materials for use by programmed teachers and by other kinds of teaching aides, and progress records of each student.

Q: Moa Lia earlier mentioned that he had to take a test on spoken Lao before he could begin to learn to read. Does each module have such a test?

District Inspector: Yes, each module has several kinds of tests. First, when a child selects a new module he takes a readiness test to insure that he has all the necessary prerequisites to benefit from the module. The results of a readiness test may, at times, indicate that a child needs to take another module first — or it may indicate that he should complete a review module, especially if he hasn't been able to take any modules for a long time because of illness or work on the farm.

Most modules of the self-instructional types also have quite a bit of built-in self evaluation to help a child monitor his own progress and be ready for the post-test when he finishes the module. Successful completion of the post-test itself indicates that a student has achieved the objective of the module and his achievement is entered on his record, one copy of which is kept by the Instructional Supervisor and the other copy is kept by the student so that he can keep track of his own progress.

The system is very flexible since it allows a student to take a post-test even if he hasn't studied the module -- if he feels confident that he can achieve the objectives of the module.

Q: What about adults, can they take the post-tests?

District Inspector: Of course, anyone in this village can take any of the modules or any of the tests. Primary education is no respecter of age. We used to worry about the dropout and wastage problems a lot more than we do now, and one reason for that worry was that if a child didn't finish primary school by the time he was about 14 years old we felt that the education system had failed. We even designed non-formal systems to upgrade the competencies of "over age" persons -- and non-formal education was kept fairly separate from primary school. What SEAMEO has done in this new system is to incorporate much of what was called either "non-formal" or "community" education into a single system of achieving the educational objectives of primary education.

A person can progress through primary education at his own pace. A number of children now start school at a later age. (We have found students who begin at an older age actually progress faster -- providing some additional savings in our educational resources.) Many students are working, usually on their parents' farms. At certain periods during the year they do

not have time to keep up their studies. However, they usually don't drop out as they used to when they would have been forced to repeat a grade on returning to school. Now they can come back and pick up where they left off, perhaps starting out with a review module to cover previous work.

Q: What form are the tests in?

District Inspector: There are all kinds, depending on the objectives of the module. Sometimes there are performance tests on some practical skill, quite often there are knowledge questions, but the most usual form concerns the application of what has been learned.

Q: Does the Instructional Supervisor give all these tests.

District Inspector: It is not possible. On the average some 100 students complete a module each week, perhaps 30 in each village. It takes about 15 hours each week in each village for testing alone. Volunteer aides give the tests. They have been trained by the supervisor to do so.

Q: Isn't there a chance for aides to score a child a little more favorably than he really deserves because of village pride.

District Inspector: We suspect that, when we first started and people didn't fully understand the system, some favoritism was shown. But, villagers soon learned that the tests were for a student's own good — to show his strengths and weaknesses as a basis for improvement. Since most persons now finish primary education there is no particular need for any examinations other than the tests associated with the modules. After all, the amount of education a child receives is up to himself and his family — and they have come to realize that what they are learning is relevant to their lives as community members and as productive members of society.

Children who desire to go on to higher levels of education must pass readiness tests before going on. These examinations are conducted periodically by the central government.

Q: We have been talking all afternoon about modules, but I have no idea how many modules constitute primary education.

District Inspector: The number varies in each subject, but the average number is about fifty.

Q: Getting back to the Instructional Supervisor — it appears that he is more a manager than a teacher.

District Inspector: That's very close to the truth. Let me list some of the duties of the IS:

- ... select and train teaching aides from the community in specific duties,
- ... assign tutorial responsibilities to older students and train them in these functions,
- ... conduct PTA meetings to orient and train parents for the self-management of their children's studies,
- ... survey community resources and enlist persons with specific skills to assist students to "learn by doing" for some of the applied modules,
- ... monitor all instructional and evaluation activities,
- ... maintain student records of progress, giving particular attention to those who are progressing unusually slowly as a basis for counseling with students and parents,
- ... maintain a complete inventory of the learning centre, including instructional modules, equipment and tests, repairing or replacing as needed,
- ... provide feedback to the central government on the assets and liabilities of given instructional modules as a basis for improvement,

... serve as an advisor to the communities on educational matters.

Q: I'm still confused. It was a lot more understandable when there was the school, the teacher and textbooks. It seems that everybody in the village is somehow involved with the new system.

Father: That's about right. Students are helping students, parents are helping their children and specialists in the community as acting as part time aides. We couldn't do this on our own, though. We need the structure that is provided by the learning modules, and we need the organization, management and counsel of the Instructional Supervisor.

Q: I can guess your answer to this last question: How is the system working?

Father: If you mean if there are problems, the answer is yes. There is often some kind of mixup, but it is getting sorted out fairly well.

If you mean if children are getting a primary education, the answer is a definite yes. No matter how fast they are progressing, there has yet to be a student in this village who has given up and stopped.

If you mean if children are in school, the answer is no. This is a "no school" village. OUR CONCERN IS NOT WITH SCHOOLS, IT IS WITH THE EDUCATION OF OUR CHILDREN!

There is very little chance that a reporter will ever write the above article. The educational system depicted in this article contains far too many fanciful conclusions about what will work effectively in a rural Southeast Asian setting. There are too many questions about feasibility, effectiveness and costs for which we do not have answers. However, the article does describe a delivery concept which can provide the framework for initial research planning, and the questions for which we do not have answers can give focus to the types of projects which should be given priority in the INNOTECH research programme.

Before discussing research plans, however, there is a need to give some background and justification for our intention to base initial research on a single delivery concept, and particularly to base it on the concept depicted in the previous article.

#### JUSTIFICATION FOR USING A SINGLE DELIVERY CONCEPT FOR INITIAL RESEARCH PLANNING

##### Integration of Research Projects

Research on delivery system components (materials, methods, etc.) should not be undertaken without some concept of the total system within which the components must function. To do research on ETV science programming, for example, or on inexpensive textbook production, on teacher training, on programmed instruction, on the use of radio for literacy training, or on any of a variety of possible delivery components - if done outside the context of some delivery concept - is to do research without clear direction. To do represents so the kind of research that could be carried on for years without bringing the total research programme very much closer to its main objective of developing a comprehensive delivery system. There must be a concept (or concepts) to give the needed direction to research efforts.

##### The Search for Alternative Systems

At the close of the February 1973 Seminar on Effective and Economical Delivery of Mass Primary Education, the INNOTECH staff concluded that the most productive approach for research planning would be (1) to postulate a number of potentially feasible delivery systems, (2) to determine the crucial components of each and (3) to design research on those crucial components which are common to several systems.

Following the seminar INNOTECH spent several weeks attempting to describe alternative systems which would meet the joint criteria of potential feasibility, cost and effectiveness. The fact that feasible total system alternatives could not be postulated was an unexpected development; "there must be a whole range of potential systems." We are now satisfied that, although there is indeed a range of delivery components to satisfy specific

instructional needs, the expected variety of total system concepts does not exist. And the reason for this conclusion is that the constraints within which the system must function do not allow much variability. Of the several constraints, cost is the deciding factor. (More on cost later.)

#### Purpose of a Single Delivery Concept

The staff has devised a single "delivery concept" which hopefully has sufficient flexibility to accommodate all reasonable components and which, itself, could be changed and reshaped (perhaps totally) based upon research results. Note that a distinction is being made here between "system concept" and the delivery system, per se. The "concept", as indicated previously, is the framework and general approach. A delivery system is a complete process of instruction and management, including all component materials and methods. Using a single system concept as a starting point will enable us not only to try out and modify (perhaps scrap) the system itself but also to try out a variety of components (methods and materials) which will be needed to make the system function. Development of a workable system per se represents our long-term objective, while development of components will permit INNOTECH to provide member countries with relatively fast payoff products for their adaptation and use.

The main criteria for a delivery concept are as follows:

- ... provide a generalized structure for delivery which is flexible enough in design to permit extensive revisions on the basis of tryout results,
- ... be adaptable to a wide variety of instructional methods so that those most cost-effective for particular types of instruction can be used,
- ... be potentially effective as judged by present knowledge and typically using state-of-the-art methods of delivery,
- ... adaptable to different countries and cultures,
- ... particularly adaptable to rural conditions in which some 70% of the population lives,

- ... increase pupil retention rate by avoiding dropouts and repeaters,
- ... provide obvious and radical savings in per pupil costs.

#### JUSTIFICATION FOR ADOPTING THE COMMUNITY LEARNING CENTRE CONCEPT

##### Need for Making Preliminary Judgments on System Design

In designing INNOTECH's initial delivery concept we have consciously made a number of judgments about methods and materials. For example, we have decided that a single Instructional Supervisor is to manage the instruction of some 200 primary students. We have done so in order to be able to depict a total system whose various components can be tried out empirically. These initial judgments, therefore, provide the basis for INNOTECH research: are the methods which are initially postulated feasible and cost effective? Are there better alternatives?

The judgments have been based upon the previously listed criteria, and the one criteria which has most influenced the design is the need to radically reduce pupil costs.

##### Reduction of Per Pupil Costs

Educational budgets in most SEAMEO countries cannot be expected to be increased appreciably in the coming years. For planning purposes, we are assuming that the proportion of national budgets devoted to education will not increase.

Within the SEAMEO countries about one-half of primary age children are not in school. If mass (universal) primary education is to be achieved, pupil enrollments must approximately double. For planning purposes, we are projecting that per pupil costs will have to be cut in half (doubling enrollment without increasing budgets).

### Need to Increase Student-Teacher Ratios

Teacher costs (salaries, retirement, training, etc.) represent some 80-90 per cent of primary education costs. Effecting drastic per pupil cost reductions, therefore, requires radical savings in teacher costs. Economies in relation to buildings, books, etc. cannot result in the needed reduction in costs. For planning purposes, therefore, we must concentrate our efforts on reducing the costs of teachers.

Present student-teacher ratios are on the order of 40:1. Doubling that ratio to 80:1 would seem as a logical target, but this change is unlikely to provide effective education within the traditional setting.

The use of double sessions can double enrolment, but teachers have to be compensated for the extra work and the doubled enrolment requires an increase in textbooks and other materials. Double (or triple) sessions are directed primarily toward the reduction of building costs through multiple utilization of facilities; the reduction of per pupil costs to one-half cannot be achieved in this way. Multiple sessions are more appropriate for urban communities than they are for small rural villages which have fewer primary age children.

Recognizing that multiple sessions can only have a marginal effect on per pupil costs, one might consider doubling class size, but learning effectiveness undoubtedly would suffer.

Another alternative would be for students to go to school only half time. "Half time" can take many forms: (1) alternate days, (2) alternate months or a block of five months per year, (3) reduction of primary education from 6 to 3 years, etc. All of these approaches have the potential for providing mass primary education if methods and materials for doubling the efficiency of learning can be found. These methods and materials will have to be innovative and, probably, quite non-traditional, and their costs will have to be managed within the limited funds available.

In order for funds to be available for non-traditional instructional methods and materials, student-teacher ratios would have to more than double. For purposes of planning, therefore, a student-teacher ratio of 200:1 has been established as a target for the primary education delivery system.

What are the ways that a single teacher can effectively manage the education of 200 students (usually in different grades)? Three ways that are potentially effective are the use of mass media, the use of "non-teachers" and self-instruction.

#### Methods for Increasing Student-Teacher Ratios: Mass Media

Radio is a widely used mass medium. Transistor receivers are inexpensive and transmitting stations are available in every SEAMEO country; the possibility of educational radio as a means for delivering primary education economically is being considered by several countries. Can radio be the core for a new and economical delivery system? Probably not. Radio has previously proved of value in the upgrading of teachers and in various aspects of adult education such as agriculture and family planning, but it has not been used successfully as the basic medium for primary education. If, in setting priorities for INNOTECH, we accept the unlikelihood of its use as the basic medium of instruction, we should still consider it as an "adjunct" medium with the potential for accomplishing some instructional purposes for which it is uniquely capable. Such purposes may include some aspects of teacher retraining which are necessary for the success of a new delivery system, some types of community and parental orientation, etc. - using it as a medium for information dissemination.

Another purpose which it may serve is one that is evident throughout the region: second language training. About one-half of the children in the region grow up speaking a local language of dialect. When they come to school they must learn a new language, usually the national language, which is the medium of instruction. Radio may very well prove to be the most effective and economical means for teaching listening and speaking skills. Reading and writing can be learned relatively easily once a child has the necessary oral skills.

For planning purposes, we have noted radio as a potential special-purpose medium of instruction which may be used within the context of a total delivery system. Materials to accompany radio instruction may be provided by correspondence or, more likely, through local education personnel.

Contrary to our acceptance of radio as one potential medium of instruction, INNOTECH has decided not to entertain ETV broadcasts as a potential delivery system. This decision is a matter of research priority and our judgment about ETV's potential for effecting the needed economies. Our judgment may be wrong, but it (and other similar judgments) have to be made so that our efforts can be devoted to delivery methods with the greatest promise of success.

ETV, admittedly, can be effective, particularly when supplemented by teachers through discussions, lectures and application. Properly done, it can provide valuable visual demonstrations which are beyond the resources of any single school. Our decision to downgrade broadcast ETV as a subject for research is not a reflection on its effectiveness; the decision has been based solely on costs.

Typically, ETV is an add-on cost which is justified by increased quality of instruction. Justified or not, it is an add-on that probably cannot be afforded within the financial constraints of most countries in the region. Teachers are still needed in about the same ratio (student-teacher) as before and the cost of classrooms and textbooks (or workbooks) probably are not reduced. The add-ons, however, can be extremely costly. Receivers, electricity (more than one-half of villages currently have no electricity) and maintenance are add-on costs at the school level. Transmission costs can be a tremendous additional expense: broadcasting and relay stations, satellites, etc. Such costs cannot be afforded within the slim resources available unless ETV, at the same time, has the potential for dramatic reductions in other educational costs. Since such reductions seem unlikely, INNOTECH will not include ETV in its initial research plan.

Video cassettes avoid the enormous costs of transmission and we may give consideration to their use within the context of a larger delivery system.

Newspapers and magazines can serve as instructional media, but it is unlikely that they can be a primary means of instruction; instructional materials per se probably can be printed as cheaply.

#### Methods for Increasing Student-Teacher Ratios: Use of Community Resources

Community education and non-formal education are both concepts which have gained wide credibility in the region. Their focus is primarily on utilitarian learning by persons who are outside the formal system, although they often do encompass formal learning as well. They represent the attempt of communities to draw upon their own resources in a cooperative learning effort. Health workers assist in health education, agricultural experts attempt to upgrade agricultural practices through education and demonstration, persons who can read and write help in literacy programmes - those with special skills and knowledge contribute to the education of other members of the community. However, self-help programmes such as these need careful organization if they are to succeed, and a number of countries currently are assisting in the planning of community and non-formal education programmes.

Other uses of "non-teachers" include literacy training conducted by members of the military, the use of older children to teach younger ones and the use of community members and parents on teachers aides. The INNOTECH research on "programmed teaching" (training local adults, with only sixth grade educations, to teach first graders how to read) is an excellent example of how "non-teachers" can contribute to primary education.

Done properly primary education conducted by "non-teaching" members of the community can be effective education. Equally important, it can also be economical. In planning the INNOTECH research programme, it seems clear that initial priority must be given to the use of local resources. The question is not whether we should use local resources, but how to use them most effectively.

### Methods for Increasing Student-Teacher Ratios: Individualized Self Instruction

Individualized instruction, in whatever form, can free teaching personnel from the tedious and time-consuming chore of classroom or tutorial teaching. If children can manage much of their learning on their own, and there is much evidence that they are able to do so, radical savings in personnel time can be effected. Programmed instruction, in its various forms, probably will become the one basic means of instruction in whatever system we consider. As was discussed earlier, INNOTECH envisions some form of guided self-instruction as one likely means of learning which can satisfy the dual criteria of effectiveness and economy. We do not intend to do extensive research on programmed instruction itself (i.e. step size, cueing, prompting, branching, feedback, etc.); our intention is to develop self-instructional materials of various kinds for use within a more total system. Programmed instruction is not a delivery system, but it may prove to be an important component of the system.

#### Summary of Research Rationale and Plans to this Point

1. Twice the number of pupils will have to be accommodated with no increase in funds.
2. Teachers account for the major proportion of costs, and a student-teacher ratio of 200:1 is set as a target for the delivery system.
3. Traditional methods, even with multiple sessions, probably cannot achieve the necessary economies; innovative approaches are necessary.
4. Student-teacher ratios of 200:1 may be achieved by using a combination of mass media (particularly radio), teacher aides and individualized instruction.

### Management of Learning: Self-directed

The teacher's role is under reexamination in many countries both because of the increasing costs of education and because of increasing demands on teachers' time and energies. This reexamination has shown that an inordinate amount of time is spent not in teaching but in monitoring social behavior ("policing") and attempting to influence children to do their studies.\* The question that is being asked is whether these duties are the proper functions for teachers - and whether or not the responsibility should not rest with the community, the parent and with the students themselves. The question which INNOTECH should ask is whether it is possible for the teacher to provide the objectives, the materials and the methods for learning and leave it to the parents and children to choose what is to be learned by each individual - and, perhaps, when it is to be learned. An approach, such as this, to self-directed learning would place a number of requirements on the delivery system: self-instructional materials, measures to evaluate progress, close liaison between school and parent, teaching children how to use learning materials ("learning how to learn") and teaching parents how to help their children in the process of learning (not necessarily the content).

If, indeed, it is possible to concentrate the efforts of teachers on providing learning opportunities, teacher efficiency might be significantly increased, and per pupil costs might be dramatically reduced through the ability of a given teacher to provide learning opportunities to more children (increased student-teacher ratios). INNOTECH does not know if self-directed learning is a feasible concept for inclusion in a mass delivery system, but it should be tried out since its potential for decreasing per pupil costs is great.

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\* Administrative and "bookkeeping" tasks also take away from the business of teaching.

### Management of Learning: Learning Centres

Because resources are limited for education, a number of countries have tried to concentrate quality learning materials in a number of centres rather than trying to disseminate lower quality materials to each school. The intent is to enable all schools to draw upon the resources of the learning centres. Such centres may be permanently located and some may be mobile, visiting satellite schools on an established schedule.

This concept appears to have relevance in our search for a viable delivery system. Its relevance to INNOTECH research rests on its potential for insuring the multiple use of quality instructional materials. Under an ideal traditional system, each child has a textbook for each course (perhaps four books at any one time) which he uses throughout a school term. "Chapter I" of each text is covered in the first week of the term, but each child carries "Chapter I" back and forth to school throughout the term; it is essentially wasted extra baggage. How much more economical it would be if the "Chapter I's" could be used by other students rather than being carried about. To do so, however, would require some kind of staggered progression of students so that all would not be at the same place in the instructional sequence at the same time. Joining the concepts of "learning centres" and "individualized learning" is one way of insuring multiple use of materials. As has been seen, economies associated with learning materials can not have the same impact on educational costs as economies in teacher costs; nevertheless, the potential of the learning centre concept to provide quality materials at low cost should be recognized in planning the INNOTECH research programme.

### Dropouts, wastage and system scheduling flexibility

Traditional education provides for an orderly progression of students through the grades. If, for some reason, a child cannot stay with this progression (e.g. if he must spend up to six months per year helping his parents in planting and harvesting) he is left behind. If he does

not find his way back into the "lock step" of formal education, he becomes a dropout and his inability to complete at least a primary education represents wastage (i.e. the time spent in school is "wasted"). If he does reenter school as a repeater, the repeated time is thought of as wastage. Undoubtedly many dropouts occur as described above, and means for further education of those who drop out are being sought through non-formal and community education. Can means to reduce dropouts and wastage be included in the design of a primary delivery system itself?

Obviously the lock-step progression inherent in the traditional system must be avoided since it is not flexible to other demands on students' time. If a child can exit and reenter the educational system whenever needed without the need for repeating, it would seem more likely that he would take advantage of this flexibility and continue his education. Should he then "graduate" from primary school at the age of seventeen rather than twelve, should he be considered a dropout? We think not. The concept of the learning centre and of various means or self-instruction may provide much of the answer to this problem. Extending the concepts of self-instruction and self-direction to the idea of a non-graded primary education probably can do much to overcome the dropout and repeater problems resulting from the traditional lock-step progression through school grades. The idea of using "learning modules" as the basic unit of instruction not only can permit multiple use of materials (the "Chapter I" on the previous page), but also it can promote a non-graded education in which every student progresses through learning modules at his own rate. Repeating of grades would thus be unnecessary since a child could easily reenter his own educational sequence should he have to interrupt primary education for whatever reason.

#### Teachers Role

Assuming that the majority of learning can be achieved without qualified teachers in classrooms, that learning materials can be made available through learning centres and/or radio, that self-instructional materials and the use of "non-teachers" are effective, the function of a teacher probably will become one of managing the instruction of 200 students. Basically, managing would involve providing for the learning experiences, the means

whereby students can profit from these experiences ("learning how to learn"), evaluating student progress and giving guidance. We picture the teacher as an "Instructional Supervisor" working out of a learning centre. Functions would include (1) select and train community members and older students in teaching, tutoring, giving special skill training, helping in the operation of the learning centre by keeping inventories and student records and evaluating student progress, (2) work with parents to insure that they can monitor their children's learning activities and (3) monitor student progress and provide assistance, guidance and means for remedial instruction. At this point, the exact duties of the Instructional Supervisor must remain vague; they will gain greater definition as different aspects of the system are tried out.

#### Summary Characteristics of the Community Learning Centre Concept

1. An Instructional Supervisor represents the only institutionally trained professional educator. The traditional teacher's role is eliminated, and the Instructional Supervisor acts as a manager of instruction providing the needed direction and organization in the use of a variety of learning resources. One Instructional Supervisor should be able to manage the instruction of 200 primary students.
2. Community members with particular skills (carpentry, homemaking, agriculture, health, religion, etc.) are enlisted to provide specialized instruction. They probably are unpaid volunteers who have been recruited by the Instructional Supervisor on the basis of a survey of community resources in relation to educational needs.
3. Other community members, who are primary school graduates, would be trained by the Instructional Supervisor to conduct specific courses, i.e. beginning reading on a part time basis. Their training would be very specific to the course they teach, and they probably would function as programmed teachers. Some could assist in the operation of the community learning centre, including record keeping and evaluating student progress. They probably would be paid for their time at a relatively low rate compared to the Instructional Supervisor.

4. Older students would all be expected to assist younger students through tutorials and remedial instruction. They would be unpaid.
5. Parents would be trained to monitor the instructional activities of their own children and be expected to take responsibility for their children's progress. Students and parents jointly would be self-directed in terms of student progress, age of beginning formal education and age of completion.
6. There probably would be no particular age limits. Except for learning reading skills, students would not be encouraged to begin at an early age.
7. Education would be modular, each learning module covering the amount of instruction that would normally take one to two weeks. Each module would be designed for the learning of specific educational objectives and would contain both a readiness test and a post-test.
8. Many modules would be in the form of individualized instructional packages. Students typically would seek tutorial help from assigned older students whenever they experience difficulty.
9. Some learning modules would be in the form of small group instruction under the direction of teacher's aides from the community. Others would be tied to instructional radio programmes.
10. Printed modular materials would be reusable by other students as soon as they are completed by those who progress more rapidly.
11. There would be very few set class periods. Students would be able to drop out and reenter at any time.
12. Primary education would be ungraded; progress would be indicated by learning modules satisfactorily completed rather than by school levels (grades).

13. All materials and records would be maintained in the community learning centre.

#### LIMITATIONS ON THE SCOPE OF INITIAL RESEARCH

##### Resistance to Change

Since it has been concluded that the traditional system cannot be expanded to provide universal primary education within available resources, any system which will meet the need will probably be a radical departure. Whenever extensive changes are made in an established system, one can expect a great deal of resistance both from those who are part of that system and from those who, in the past, have held the system in high repute. Radical changes in the delivery of primary education undoubtedly will meet resistance of various kinds from policy makers, educators in the establishment, teachers and teachers' unions, parents, etc. As innovators in a variety of fields have learned, the business of being a change agent is no easy task. Therefore, whatever delivery system is developed during the course of INNOTECH's research should be expected to have to overcome strong resistance; it will have to be "sold" to those who control, to those who operate and to those who use primary education.

The question which we face in giving direction to the INNOTECH research programme is not whether potential resistance to change should be given serious consideration. The question is when such systematic consideration can best be given. It is our firm belief that the problems of developing an economical system that will provide all children with an adequate education (the methods of delivery, themselves) are of such an order of difficulty that we must concentrate our initial efforts on this aspect alone. Within reasonable limits, the delivery methods that are tried out during the early stages of research cannot be inhibited by possible reactions such as: "parents are not used to this - they probably will think that the quality of education will suffer" or "qualified teachers are going to be out of work" or "the Ministry is planning a large-scale building programme contrary to what INNOTECH is developing" or "what are we going to do with the present textbooks?", etc. We must recognize that, given a means for economical and

effective delivery, there would be a long period of transition before such problems of acceptance can be overcome.

#### Development of Educational Objectives

One extremely important question about primary education is what is to be taught - the objectives of primary education in terms of student achievements. The initial step in any research admittedly, must give its focus to objectives. However, INNOTECH does not plan to do so initially beyond developing explicit objectives based upon what is currently being taught. No attempt will be made (again initially) to revise and improve upon the content of the primary curriculum; the research will concentrate on methods of delivery.

This decision is solely one of timing. INNOTECH will be conducting research on models to develop primary education objectives at the same time that work on the delivery system gets underway. Rather than wait upon the results of our model-building research, applying the model to a specific location and obtaining the approval of decision-makers to use the results in designing a new curriculum (a minimum of two years' work) - the decision has been to go ahead with delivery system research and to incorporate methods for the development of objectives at a later date.

#### Funding Schemes

Means for increasing funds for primary education also will not be given early consideration. There probably are a number of such means, such as those used in the Barrio High Schools, but the decision is to concentrate on "efficient and economical" delivery rather than on means to increase funding.

#### Desirability of Mass Primary Education

As the INNOTECH staff gains additional experience and knowledge while trying to develop a feasible delivery system, there undoubtedly will be many other occasions when priorities will have to be set in determining what will and what will not be included in the research programme. However, one topic which

will not be questioned is the desirability of mass primary education. Some persons have pictured an over-educated population in which children who have received primary education have unrealizable aspirations for higher levels of education. These are problems which INNOTECH would be pleased to address itself if only it could first help in the solution to the problem of mass primary education.

## PROCEDURE FOR RESEARCH PLANNING

### Introduction

Beginning in July 1973, INNOTECH will have 20 persons from SFAFEO countries on the professional staff, only 1 or 2 of whom are currently at the Centre. We feel it would be inappropriate to establish specific research plans now without involving those who will be conducting the research programme in its planning.<sup>1</sup> However, it is the responsibility of the present staff to prepare research recommendations as a basis for more-specific project design by the new staff. The recommended programme which follows, therefore, is intended as a working paper for use in a series of intensive staff planning meetings after INNOTECH's relocation to Saigon.

### General Research Methods

The overriding goal of INNOTECH's research effort over the next several years must be the development of a workable system for delivery of mass primary education. Piecemeal projects outside the context of this system development should not be attempted; staff size will be too limited to afford research which is not directed toward delivery systems. Even within the context of delivery systems, we must set priorities in terms of the potential contribution that a given study can make to system development.

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<sup>1</sup> The high annual staff turnover rate which has plagued the continuity of INNOTECH's programmes in the past should be much reduced in the future; the majority of staff applicants have indicated their intention to remain at least two years.

As part of the search for a workable delivery system, a wide variety of products (methods, materials, etc.) will be developed which can be of use to member countries. Products of this kind will be evaluated in terms of their possible fairly immediate use by member countries. Those products with the potential for wide-scale use in the region will be developed and disseminated as prototypes. An example of such a prototype is the Programmed Teaching methodology which has been developed during this past year for the teaching of the Malaysian language to first grade children. The method will be disseminated to member countries this year as a prototype technique for using local community members without previous formal training to assist in the teaching of primary children. The development of products such as this is an essential function of INNOTECH; they represent a more-immediate payoff of the investment in the Center than can be possible if the total delivery system were considered as a single product.

Even though we have postulating a rough outline of a delivery system earlier in this paper, there is little doubt that this outline will undergo extensive changes as research progresses. We still may not be knowledgeable enough about the success and failures of a variety of delivery systems in other countries. The staff has read numerous reports and has talked with many persons from other countries, particularly during the February '73 Seminar, but we did not at that time have our present focus on the problem, and we have not observed these systems in practice. Rather than reinvent the wheel, we will survey primary education delivery systems in selected countries as a basis for reorienting our present thoughts on a delivery system and for including components which have proved of value elsewhere.

In summary, three general research methods on delivery systems will be applied by INNOTECH over the next several years. The highest priority will be given to research on the development of a total delivery system. Second priority will be assigned to the development of research products which can be prototypes for fairly immediate adaptation and use by member countries. The third priority will be the conduct of surveys of selected systems in operation elsewhere.

### A Five-step Procedure for Research Planning

The five steps given below should not be considered as a research outline; they are steps which will be followed by the staff in developing a research plan after INNOTECH's move to Saigon.

- Step 1. Conduct a series of staff meetings in August 1973 as a basis for:
- (a) revision of the present delivery system concept
  - (b) formulation of crucial questions about the delivery concept for which we do not currently have sufficient information.

Examples of questions:

- ... What methods are best to teach language skills to youngsters living in rural villages where the language of instruction is different from that spoken at home? Is the use of radio the most cost-effective means for developing speaking and listening skills? Is programmed teaching most cost-effective for learning how to read? What other methods seem feasible? Will methods necessarily differ for different languages?
- ... What curriculum content can be taught using local persons as programmed teachers? Can programmed teaching be used for science, mathematics and social studies as well as for language? Can programmed teaching be used at all primary grade levels?
- ... What forms of self-instruction are most cost-effective? For what subjects, grade levels and languages are different types of self-instruction most appropriate? Can teachers be used as subject matter specialists to programme self-instructional materials? What is the best way to train them in programming techniques?
- ... Can parents and children in rural villages be self-directed in managing the children's education? What are the best means for the educational system to assist them in achieving self-direction? What should parents know in order to be able to help their children?

- ... What "learning how to learn" techniques are best for teaching students how best to benefit from self-instructional modules? Is the use of tape cassettes the most cost-effective method?
- ... What methods are best to identify and match community resources with educational needs? Can these methods be applied by a teacher (Instructional Supervisor)? Will they differ for villages with different characteristics (size, economic level, etc.)? Will community members with specialized skills volunteer their time? How much time would be required?
- ... Can a method be developed whereby older students give remedial or tutorial help to younger students? What training must be given older students? Can the method be tried out in advance of developing a total delivery system - using present instructional materials?
- ... What minimum components will have to be developed before trying out the total delivery system?
- ... How would the management of learning by an Instructional Supervisor differ for villages of different sizes? Is the idea of an itinerant Supervisor feasible?
- ... What should be the specific content of a learning centre? In what quantities should different kinds of instructional materials be maintained? How will quantities differ among communities of various sizes? Is the concept of a mobile learning centre for small villages cost-effective in comparison with a permanent centre?
- ... What is the most cost-effective means for producing printed modules for multiple use by students?

- ... How can a system whereby each student progresses at his own rate be best managed? Will provision for allowing a student to stop and restart his education at any time achieve its purposes of reducing dropouts and of making education compatible with other demands on youngsters' time?
- ... Can efficiency be increased so that a primary school education could be achieved in three years? How could the system be made adaptable to the idea of starting school at a later age?
- ... How could the system be designed to be compatible with other educational needs in the village - non-formal upgrading of previous dropouts, adult education, literacy training, etc.?
- ... Would members of rural communities accept the radical changes necessary for the system to function? Would the use of "non-qualified" teachers be accepted? What steps should be followed to prepare villagers to accept and support a new system?
- ... Etc., etc.

(c) The above questions are only examples of the kinds of crucial questions which would be developed during research planning meetings in Saigon. The questions which will be prepared by the staff would provide the bases for setting priorities among projects, whether they be reviews of the literature, visits to other countries to investigate pertinent aspects of the deliver of primary education or research conducted in the field. Following the research planning meetings, staff members would prepare definitive recommendations and designs for projects.

(d) Develop criteria for the selection of a site (or sites) for the conduct of research on the delivery system. Examples of criteria are

- ... Is rural and typical of country,
- ... Has approximately 50 per cent (or less) of children currently receiving a primary education,
- ... Includes some 8-10 villages of different sizes within fairly close geographical proximity,
- ... Contains a sizable proportion of children who do not speak the language of instruction,
- ... Has relatively easy access to Saigon,
- ... Exhibits a willingness of villages to participate in study,
- ... The country indicates willingness to participate and support a long-term project by:
  - (1) designating a site location which meets the previous criteria,
  - (2) appointing Ministry officials to act as a steering committee,
  - (3) appointing one or two project coordinators,
  - (4) appointing 6 to 8 primary curriculum specialists (good teachers in specific subject matters would be satisfactory) to develop instructional materials following training by the INNOTECH staff.

Step 2: Select site(s) for field research via correspondence and visits to SEAMEO countries.

Step 3: Make final staff assignments.

Step 4: Design detailed projects and schedules (field research, visits to selected projects in other countries, literature review).

Step 5: Begin projects.

Targets:

- August 1973. Step 1 (Research staff meetings to redesign delivery system concept, to set priorities for research and to establish criteria for field site location)
- October 1973. Step 2 (Select site(s) for field research)
- September 1973. Step 3 (Make final staff assignments)
- November 1973. Step 4 (Design detailed projects and schedules)
- December 1973. Step 5 Begin projects.

A Final Note on Delivery System Research

At the outset we indicated that priority would be given to research on the total system as opposed to research on system components. This focus can be maintained by two methods. First, by designing individual projects within the framework of the delivery system concept. Second, by getting into the field as soon as possible with a first approximation of the system. This note pertains to the second method.

A system concept can be tried out and modified even if research on its crucial components has not been completed. A system has certain characteristics that can be investigated in the field with less-than-optimum materials and procedures. For example, the delivery concept described earlier in this paper ("Community Learning Centre") calls for a wide range of self-instructional materials. Rather than waiting for research to optimize these materials, we propose training curriculum experts and teachers (as noted in the criteria for site selection) in simple programming techniques so that self-instructional modules could be made available for trying out the system. The concept also calls for the use of radio for initial language training; we could approximate this medium by tape recordings. Ultimately the system will call for optimum techniques for establishing educational objectives, but we could approximate this step by deriving objectives from the materials currently being taught. The main point here is to use state-of-the-art and off-the-shelf methods and materials for testing and modifying the total system - and to insert improved methods and materials as they become available from our other research efforts - approximating, modifying, improving.

#### 4. Development of Instructional Objectives by SEAMEO Member Countries

**Background:** This overall project is both an extension of Project PROGRESS and a recommendation by the Technical Working Group (TWG) as convened by SEAMES on 19 July - 2 August 1972.

The project is being conducted as four sub-tasks or studies:

Study A. Comparative Study of Present Educational Objectives of SEAMEO Countries

Study B. Development and Tryout of a Model for Deriving Life-Relevant Objectives of Primary Education

Study C. Dissemination of Indonesian Model for Priority-setting among Educational Objectives

Study D. Development and Tryout of Model Procedures for Assessing Achievement of Primary Education Objectives

**Study A: Comparative Study of Present Educational Objectives of SEAMEO Countries as these are Represented by Official Documents.**

- Purposes:**
- (1) Provide inputs to the study of life-relevant objectives for students for whom primary education is terminal.
  - (2) Compare methods for deriving 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 is 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.

Staff: Dr. Aurelio Tiro (Project Leader) has been assisted full-time since the beginning of January by the following interns.

Ning	(Philippines)
Prachak	(Thailand)
San	(Vietnam)
Sudomo	(Indonesia)

Previous Targets:

November 1972  
Prepare Planning Document

December 1972  
Collect Published Documents

February 1973  
Categorize and Organize Data

March 1973  
Review and Revise Data with Responsible Persons in each country  
(Field Trips)

June 1973  
Prepare Comparative Study Report

Progress: All documents have been collected from the SEAMEO countries and translated. Analyses are completed as is the draft report. Field reviews by all countries except the Khmer Republic and Singapore are complete. (The Khmer Republic will not be visited because of the current fighting. However, present participants from that country will be asked to review study results.)

New Targets: 11 May 1973

Complete field review of draft report

1 June 1973

Complete revision of the final report and preparation of an appendix volume of primary education objectives from the member countries

June 1973

Complete final typing (Singapore)

July 1973

Publish (Saigon)

Evaluation: Because of staffing constraints, the initial collection of documents was done in January '73 rather than December '72. For the same reason the collection was not done by staff members; participants in the October - December '72 three-month training course were requested to collect all pertinent documents on their return to their countries. The procedure worked well, and essentially all documentation was received by mid-February. As soon as documents were received, translations and analyses began - with the result that the draft final report was completed on 19 March 1973. Dr. Tiro began his field review tour immediately thereafter, each Ministry assigning responsible committees to review the materials. Partial results show that only relatively minor revisions were typically needed. These results were not from disinterest on the part of review committees; they were from the thoughtful analysis that was done initially by Dr. Tiro and his co-workers. All activities are on schedule.

<p>Study B: Development and Tryout of a Model for Deriving Life-relevant Objectives of Primary Education.</p>
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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 are to be developed and tried out this year. The five models are given below as a series of steps. (A more complete description can be found in the Appendix: "A Proposed Pilot Study of Five Alternative Models in the Philippines.") The intent is to try out these models during a three-week stay in Cebu City in the Philippines.

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).

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\*\* Note that this step is identical to one in Alternative #1. Committee E, thus, makes this input to all alternatives in a single meeting. The multiple use of the inputs of the various committees is illustrated in the overall project diagram given in the planning document (Appendix).

- ... 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 #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 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 #5Steps

- ... 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 achievements: 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 result 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 (a) simply to list types of objectives and behavioral examples or (b) 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?

Data from the Philippines pilot study will be evaluated to compare the five alternatives. The questions which should be answered by the analysis are:

(1) Feasibility:

Which alternative is the most easily administered?

- ... takes the least preparation?
- ... is the easiest to explain?
- ... requires fewest man-hours of committee time?
- ... is most generalizable to new locations/countries?

(2) Acceptability:

Which alternative is preferred by those who contribute to it?

- ... seems most reasonable to parents, teachers, administrators, etc.?
- ... best encompasses unique local circumstances?
- ... is most understandable when results are reported?
- ... would most likely be used in curriculum revision?

(3) Comprehensiveness:

Which alternative results in the greatest number of acceptable objectives/examples?

- ... requires least revision when results are reviewed by local authorities?

## (4) Validity:

Which alternative gives the highest statistical prediction of the results of the other alternatives (part-whole correlation)?

(This analysis assumes that the majority of possible "life-skills" objectives will be developed by one or the other of the five alternatives. The single alternative which results in a higher proportion of those developed by the total project (the highest part-whole correlation) is, therefore, assumed to be the most valid.)

During staff meetings in Saigon we will review the results of this first pilot study to (1) determine if any of these approaches can provide the best model and (2) design a more extensive field study to be carried out in two countries in 73-74. We may determine that modifications of the above approaches may be best for pursuing further, or we may decide to drop this "judgmental" approach in favor of one based upon more empirical evidence, e.g., task analysis or critical incident technique.

Staff: Mr. Anwar Jasin (Project Leader) has been assisted full-time since January by the following interns:

Miss Helen Manampan	(Philippines)
Miss Sanith Manirath	(Laos)
Mr. Thai Quang Huon	(Vietnam)
Mr. Teo Eng Chuan	(Singapore)

Previous Targets: November 1972

Prepare Planning Document

January 1973

Develop Universal List of Potential Life-relevant Objectives

Develop Methodology for Priority-setting in terms of Life-relevancy

February 1973

Conduct Local Tryouts and Revise

March 1973

Prepare for One-Country Pilot Study

May 1973

Conduct Pilot Study

June 1973

Analyze Results and Revise

August 1973

Prepare Report of Results and Plans for Field Study

February 1974

Complete Two-Country Field Study

April 1974

Conduct 8-Country Workshop to Disseminate Results and  
Initiate Possible Implementation by Member Countries

June 1974

Publish Final Results

Continuous

Provide Consultant Services to Member Countries

Progress:

All targets have been met. Local tryouts were held to develop and improve data collection techniques (primarily questionnaires). A planning document was prepared (see Appendix), and approval was granted by the Philippines to conduct the pilot study in that country. All data collection forms have been designed, and the majority have been typed on stencil.

New Targets: No change from previous targets. The Philippine pilot study is scheduled for 23 April - 11 May 1973. Publication of the first report is scheduled in Saigon for September 1973.

Evaluation: No definitive evaluation possible beyond the planning document preparation (good) and the scheduling of activities in preparation for the pilot study (excellent).

Study C: Dissemination of Indonesian Model for Priority-setting among Educational Objectives.

- Purposes:
- (1) Inform member countries of a priority-setting model which was established this year in Indonesia.
  - (2) Provide step-by-step instructions for adaptation and use of the model.
  - (3) Stimulate rational priority-setting in terms of national goals and purposes.

Summary Description: Four documents were prepared last year by the Office for Educational Planning (BPP) of the Ministry of Education and Culture in Indonesia. These four documents describe the theory, the process and the results of using a "value-contribution" technique for deriving priorities among educational objectives. The basic concept is that national goals derive their relative value from their relative contribution to the basic purposes of Indonesian society; that national objectives derive their relative value from their relative contribution to national goals; that national targets derive their relative value from their relative contribution to national objectives - and that educational objectives derive their relative value from their relative contribution to national targets. Thus, by a sequence of judgments about relative contribution, the relative value educational objectives can be derived from national purposes, goals, objectives and targets.

The relative priority of educational objectives, however, is more than relative value. It must also consider (1) the human component in each national target (on the assumption that this is the only component which can be effected by education), (2) the degree to

which each educational objective is currently being achieved in comparison to the desired level of achievement (priorities among educational objectives are directed toward change - educational achievements which currently are adequate do not require change and, consequently, have a low priority), (3) the proportion of a given educational achievement which should be or can be learned in the formal educational system as opposed to the use of other community resources, e.g., should or can religion be taught in the school or should it be taught in religious institutions (providing focus to setting priorities for the formal education system).

The BPP has gained experience not only in the use of the method for deriving priorities, but also in the application of it in curriculum reform. INNOTECH, SEAMES and RED all considered the Indonesian experience to be of sufficient value to warrant a request to the Indonesian Government to second to INNOTECH the two persons most familiar with the method so that they could prepare a single document outlining the Indonesian Model for possible use by other countries.

Staff:

- Indonesian Ministry of Education and Culture -
  - Mr. Sudyarto
  - Mr. Sutjipto
- INNOTECH -
  - Mr. Anwar Jasin

Previous Targets: November 1972

Secure permission from Indonesia (and possibly UNESCO) for modification and publication of model.

December 1972

Prepare planning document and invite appropriate Indonesian staff members (BPP) to aid in the study during the month of March 1973

March 1973

Revise, condense and clarify the BPP "value-contribution" model

June 1973

Publish and distribute final report

Progress:

Permission was secured in January 1973 for modification and publication of the model. An outline and schedule was prepared by the INNOTECH staff and Messrs. Sudyarto and Sutjipto on 19-20 March. Work has progressed since that date.

New Targets:14 April 1973

Complete draft of report by Sudyarto and Sutjipto

July 1973

Complete revision of draft (Other staff commitments preclude an earlier completion date)

August 1973

Publish final report

Evaluation:

INNOTECH is most grateful to the Indonesian Ministry of Education and Culture for the help of Messrs. Sudyarto and Sutjipto. Final evaluation must await final publication.

**Study D: Development and Tryout of Model Procedures for Assessing  
Achievement of Primary Education Objectives.**

- Purposes: (1) Extend Studies A & B to determine present achievements and deficiencies.
- (2) Provide a model to member countries.
- (3) Provide a basis for curriculum revision to overcome deficiencies.

Previous Targets: Draw up plans for this study by June 1974.

New Targets: No change.

5. MEKONG Project: Human Resources Development
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Purposes: Develop a generalizable model for the development of human resources to parallel water resource development in the lower Mekong.

Summary Description: INNOTECH has joined with other SEAMEO Centres (principally TROPMED and SEARCA) in developing a proposed plan for human resource development. INNOTECH's responsibility would be concerned with the educational component of the model. Overview of the plan:

The proposed project would have a duration of three years. The first year would be devoted to needs assessments and to the development of an initial model and procedures ready for tryout. The second project year would cover tryouts in one community in each of the four riparian countries and subsequent revision. The third year would concern the application of the model by host country representatives with the project staff performing advisory, supporting and evaluative roles. On the basis of the third year's experience the model would be given final revision in cooperation with representatives of each riparian country.

Progress: A joint proposal was prepared for submittal to the ECAFE/Mekong Committee in Tokyo in early April 1973.

## **TRAINING**

1. Three-month Participant Training Programme
2. Ten-month Intern Programme

1. Three-month Participant Training Programme
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- Purposes:
- (1) Provide key educators of the region with the skills and knowledges necessary for educational planning, decision-making and application of realistic change strategies.
  - (2) Individualize training for persons with varying needs and backgrounds.
  - (3) Prepare training modules which will require minimum changes (and professional staff involvement) from course to course
  - (4) Package training modules so that many can be self-administered and so that many can be used outside the center for in-country training programmes.

Summary Description: (Overview)

The solution of educational problems in our countries is going to require more than money and good intentions; it will require people who can focus on "real" problems, generate and evaluate alternative solutions, and be able to get worthwhile solutions tried out and implemented.

The new three-month INNOTECH Training Programme, which began on 12 March, has been designed to increase on-the-job capabilities of participants to solve problems and implement changes. Twenty-four persons (three from each SEAMEO country) have been invited to participate in a unique individualized programme that we feel will be one of the most innovative and rewarding ever offered at INNOTECH. Participants selected by their home governments are key persons whose jobs require planning and decision making. It is our hope that, upon completion of the programme, they will have increased their capabilities to perform their important home duties to the maximum. Training, therefore, focusses

upon the improvement of applied job skills rather than upon the absorption of generalized and theoretical knowledge.

INNOTECH's three-month training course is devoted primarily to educational planning, decision-making, and change-agent behavior. Course content focusses upon the systems approach to educational planning, educational technology in Southeast Asia, and innovative strategies for effecting change. Training emphasizes practical applications of concepts learned to regional, national, and on-the-job "real-world" problems.

(Modularized Learning)

All course work is modularized, i.e., broken down into modules or clusters of time appropriate to achieve a desired training objective. Each module<sup>1</sup> follows the same basic format:

- (1) Preview
  - (a) Overview of Module
  - (b) Rationale for Learning It
- (2) Objectives
- (3) Pre-Test
- (4) Core Instructional Activities
- (5) Criterion Post-Test
- (6) Enrichment Seminar (Optional)

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<sup>1</sup> A sample module is given in the Appendix.

**(Training Objectives)**

**(I) After completing the first month of the training programme, each participant should be able to:**

- (a) demonstrate their mastery of 15 core modular objectives by passing criterion post-tests for each core module. Each module covers a specific aspect of the systems approach to educational planning.
- (b) demonstrate their mastery of 4 adjunct modular objectives by passing criterion post-tests for each adjunct module. Adjunct modules stress setting national educational priorities and the foundations and causes of conservatism in Southeast Asia.
- (c) select one Elective Instructional Activity (out of three) for 10 of the 15 core modules and successfully complete the designated requirements. Electives reinforce and supplement concepts learned in the core modules.

**(II) After completing the second month of the training programme, each participant should be able to:**

- (a) demonstrate their mastery of 8 modular objectives specified in the Instructional Technology Workshop by passing criterion post-tests for each module. Each module covers a particular aspect of course design, implementation and validation.
- (b) apply knowledges and skills learned in the workshop to a training problem relevant to their jobs.

**(III) After completing the third month of the training programme, each participant should:**

- (a) demonstrate their mastery of 10 core modular objectives by passing criterion post-tests for each core module. These 10 modules focus upon project management (i.e., tryout and evaluation procedures and planning and scheduling techniques) and strategies for effecting change.

- (b) apply the knowledges and skills acquired in Mastering Core, Adjunct, and Workshop Modules to a significant national problem in their home countries.
- (c) write a Research Paper, design a Sample Self-Instructional Programmed Learning System, or produce an Audio-Visual Programmed Presentation on a topic of their choice (preferably in the area of Educational Technology).

(Course Methods and Content)

The Core Instructional Activities are designed to maximize individualized learning. A variety of activities are provided in the 25 Core Modules, 10 Elective Modules, and 8 Instructional Technology Modules. These activities include programmed reading, self-instructional learning packages, professional staff tutorials and seminars, peer tutorials, tape/script/workbook programmed instruction, filmstrip/tape/workbook programmed instruction, slide/tape presentations, 16 mm & 8 mm films and filmloops, video-tape presentations, field practicums, etc. In short, we attempt to assure that every participant will master every modular objective through one of the many learning activities prescribed for him.

Participants work in a variety of learning settings including independent study, 1:1 peer and staff tutorials, small group seminars and workshops, and National Country Teams.

Lectures, or as we now call them — Enrichment Seminars — are used in a different way than is usually the case in higher education. They are used to reinforce instruction and to stimulate thinking, not as the primary mode of disseminating information. Core instructional information is obtained through the various learning activities not through lectures.

Enrichment seminars are given when a certain percentage (e.g. 1/2 or 1/3) of the trainees reach a certain point in the course. Seminars, thus, become highly individualized; the same seminar content might well be presented to 3 different groups of trainees in 3 different ways, depending upon the learning needs of the groups. Seminars are scheduled, but not compulsory to attend.

English core and adjunct modules are translated by former trainees into three languages - French, Thai and Indonesian - for those participants who cannot master the modular objectives in English. These core module language alternatives are extremely helpful to over half of the trainees. At the present time, 11 trainees use the English exclusively, 4 use the French exclusively, 3 use French and English, 3 use Thai and English, and 3 use Indonesian and English. After completing the training course, many trainees have indicated their desire to take the core module language alternatives home and use them for training purposes throughout their countries.

(Criterion Pre- and Post-Testing)

Each module has a pre- and post-test. The pre-test measures what trainees already know about the objective(s) of a given module. If a trainee demonstrates mastery of the objective(s) on the pre-test, he is permitted to skip the instructional activities and proceed either to the elective for the module (if there is one) or to the pre-test for the next module. Depending upon their pre-test performance, trainees may be permitted to skip specific portions of the instruction and may be excused from taking a post-test on pre-test questions mastered.

For those trainees experiencing difficulty in their English reading ability, pre-tests are provided in an alternative language. As the course progresses, these trainees' English often improves and they gradually move toward working in English.

When a trainee feels he has mastered the objective(s) for a given module, he takes the criterion post-test (i.e., usually an alternate form of the pre-test). Those who pass proceed to either the elective for the module or the pre-test for the next module. Those who do not pass are recycled into either a different type of instructional activity or a language alternative. Post-tests are translated into the 3 languages for those trainees requiring them. We have former trainees (proctors) available as resources to evaluate language alternative pre and post tests.

All trainees are permitted to defend "incorrect" answers (as judged by proctors) and are permitted to take post tests as often as they like.

Students are responsible for their own learning. They move through the course at a pace which approximates their ability. This is extremely important in our training course, since trainees do differ so greatly in their ability to master English-written instructional materials.

Trainees work at the Center officially from 8:45 AM to 4:45 PM, although it is not unusual to find participants working as early as 7:00 AM and long into the night. Two very enthusiastic French-speaking participants from the Khmer Republic are reported to be working approximately 20 hours per day.

(Course Management)

Five proctors, who have demonstrated their mastery of the core modules in a previous training programme, are responsible for translating materials, providing participants with all instructional materials, administering and scoring all pre- and post-tests according to criteria provided by the Instructor, supervising field practicums, scheduling and conducting non-English tutorials and seminars, arranging for outside resources to be used (e.g., Singaporean guest speakers) collecting relevant data as instructed, and maintaining ongoing individualized student learning profiles. One of the proctors is responsible for determining whether designated requirements on electives are fulfilled. In addition to these "housekeeping" functions, these proctors, having been through a previous course and having experienced all the problems which face new trainees, are extremely supportive of new participants who are not accustomed to individualized learning.

The Instructor is responsible for developing (or selecting off-the-shelf) all training materials for the course; constructing all pre- and post-tests and the criteria for evaluating them; designing the format for the National Problem Application Exercise (i.e., where trainees apply skills learned in core modules and electives to a significant national problem of their choice); designing the electives which are complementary and supplementary to modules; and structuring the course in an individualized "Kellerian" way.

The Instructor either leads the enrichment seminars or arranges for other more expert staff members to do so; he provides brief (10-15 minute) tutorials to

individuals or small groups of students requesting them (e.g. one day, the Instructor gave 13 individual tutorials and 3 small group tutorials); he manages the Instructional Technology Workshop for all trainees; he supervises the National Problem Application; he judges the merits of Research Projects; and he is the final judge on any issue arising between trainees and proctors (usually pre- and post-test disagreements).

(Evaluation Procedures)

In addition to pre- and post-test performance measures, we also require trainees to complete a simple Feedback Sheet (see Appendix ) after each module and elective. Feedback sheets provide trainees with the opportunity to comment on any aspect of the module (or elective) they desire. Because feedback is anonymous, trainees respond freely and honestly. One other method is used to obtain feedback — proctors are instructed to keep a "diary" of verbal comments which participants make informally regarding any aspect of training. Some very enlightening feedback has been collected in this manner.

Thus, the instructional system may be considered cybernetic in that every module is constantly undergoing evaluation and revision based upon (1) performance measures, (2) feedback sheets, and (3) proctor's diary. This present training programme will be revised, as needed, based upon the above information, three debriefings to be held at various points in the course, and new educational developments relevant to Southeast Asia. This revised programme will then be tried-out on another group of trainees in Saigon in September 1973. The September Saigon programme will similarly be revised and upgraded in preparation for the next programme, etc.

Progress: (Participants in the Fourth Three-Month Training Programme)Indonesia

Mr. Sentot Soelistyo	Lecturer Institute for Teacher Training Bandung
Mrs. Suharsini Arikunto	Secretary Curriculum & Methodology Department Centre of Educational Research IKIP, Jogjakarta
Mr. Mohammad Saleh Muntasir	Assistant Lecturer Institute of Teaching Aids IKIP, Surakarta

Khmer

Mr. Sek Chau Sum	Assistant Director Primary Education
Mr. Un Pum	Assistant Inspector Primary Education Kompong Thom Province
Mr. Chhea Yuong	Assistant Director Secondary Education Battambang

Laos

Mr. Chanthalath Litnhouvongs	Inspector Primary Schools Saravane Pakse
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Laos (Cont'd)

Mr. Sisaket Phachantha

Dean of Students  
Normal School of Vientiane  
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Chief  
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Mr. Pham Do Khiem

Chief

Planning Department  
Ministry of Education  
SaigonProgress & Plans: (Brief Description of the First 15 Core Modules)

## BRIEF DESCRIPTION OF CORE MODULES

Three-Month Training Programme  
12 March - 1 June 1973

## INNOTECH

MODULE	TITLE	BRIEF DESCRIPTION
1	Educational Development in Southeast Asia  Robert Jacobs	An essay discussing why Asia's educational problems are self-imposed, why traditional assumptions about Asian education need to be questioned and how a regional center for educational technology can provide an Asian environment for innovations to flourish
2	The INNOTECH Project  Ly Chanh Duc	An essay depicting the basic concepts which characterize the Regional Center for Educational Innovation and Technology (INNOTECH)

## ENRICHMENT SEMINAR

3	A Systems Approach to the Design of Instructional Systems  David Barbee and William Motzel	A programmed audio/visual presentation describing the essential elements of the systems approach as it is applied to instructional design
4	Applications of a Systems Approach to Educational Improvement  David Klaus	An essay describing an alternative interpretation of the systems approach with concrete examples provided
5	The Systems Approach to Education  Henry Lehmann	An article which clearly illustrates the sequence and relationship between the various components of the systems approach

MODULES	TITLE	BRIEF DESCRIPTION
6	BPP Indonesian Model INNOTECH	An essay describing the systems approach to educational planning, developed by the BPP in Indonesia
ENRICHMENT SEMINAR		
7	Model Building Seminar INNOTECH	Exercise on the Design and Development of an INNOTECH Systems Approach Representative Model
8	Formulating Educational Problems INNOTECH	Self-instructional mathematics program on how to formulate educational problems effectively
9	Seminar on Writing On-the-Job Problem Statements INNOTECH	Oral presentation and practice on how to write on-the-job problem statements
10	Goal Analysis  Robert Mager	Two chapters from a book that describe a procedure for distinguishing between statements that describe performances and statements that describe abstractions
11	Formulating Change Objectives INNOTECH	A self-instructional mathematics program on how to formulate change objectives from statements of educational problems
ENRICHMENT SEMINAR		
12	Preparing Instructional Objectives Robert Mager	A "branched" programmed book on how to state objectives that succeed in communicating your intent to others

MODULE	TITLE	BRIEF DESCRIPTION
13	Measuring the Accomplishment of Objectives Jerry Short	Essay which stresses the importance of stating educational objectives so that their achievement can be measured
14	Seminar on Writing On-the-Job Objectives INNOTECH	Oral presentation and practice on how to formulate objectives relevant to trainees' jobs
15	Identifying Resources and Constraints in Southeast Asia INNOTECH	Three papers which discuss the creative role of resources in educational planning and the importance of evaluating innovative ideas in terms of six broad categories of constraints

ENRICHMENT SEMINAR

ADJUNCT A	Outstanding Problems in Asiland  INNOTECH	Using the imaginary land of ASILAND as a focal point, a land having conditions common to all eight SEAMEO countries, the essay discusses significant problems which arose during three critical stages of educational development
ADJUNCT B	Problem of Educational Conservatism in Developed and Developing Countries  C.E. Beeby	An enlightening study of the causes of conservatism in education both in developed and in emergent countries and the special problems of resistance to change among the teaching profession

MODULE	TITLE	BRIEF DESCRIPTION
ADJUNCT C	Aims and Priorities: The Road Map of the Educational System  P.N. Coombs	An examination of the problems involved in achieving a broad range of educational aims at the same time and in setting priorities among educational objectives
ADJUNCT D	Setting Priorities Among Educational Objectives  INNOTECH	A self-instructional program which examines a representative technique for systematically setting priorities among educational objectives - The Value Contribution (VC) Method

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ENRICHMENT SEMINAR

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## (Modules Completed to Date)

All 15 Core Modules and 4 Adjunct Modules including pre and post-test have been written in English. As of 31 March, the trainees had progressed as follows:

<u>No. of Modules Mastered</u>	<u>No. of participants demonstrating mastery as of 31-3-73</u>
10	2
11	4
12	12
13	5
14	1

## (Individual Learning Profiles)

3 Samples of Individual Learning Profiles are given on the following pages. Note that the first participant, Mr. Sentot, an Indonesian, began instruction in both English and Indonesian, but, as training progressed, moved exclusively to English in both instruction and testing. Mr. Sisaket, a participant from Laos, used both English and French for the first 8 Modules, but now has moved to French only; notice how many times he took the post-tests for Modules 1-4. Mr. Weera, a Thai trainee, has worked almost exclusively in Thai.

## INDIVIDUAL LEARNING PROFILE

NAME Dintot Joelisty

MODULE NO. _____	PRE—TEST / LANGUAGE MEDIUM	INSTRUCTION / LANGUAGE MEDIUM	POST—TEST / LANGUAGE MEDIUM	TIME TO COMPLETE MODULE
1	0 / Enql.	Enql. / Ind.	100% / Enql.	3-40
2	—	Enql. / Ind.	100% / Enql.	2-07
3	—	Enql. / Ind.	100% / Ind.	7-30
4	—	Enql. / Ind.	100% / Ind.	4-13
5	—	Enql. / Ind.	100% / Ind.	6-03
6	—	Enql. / Ind.	100% / Ind.	3-58
7	—	Enql.	100% / Enql.	2-41
8	50% Enql.	Enql.	100% / Enql.	2-10
9	100% Enql.	Enql.	—	2-10
10	—	Enql.	80 / Enql. ; 100% / Enql	3-30
11	—	Enql.	100% / Enql.	5-25
12	—	Enql.	100% / Enql.	2-47

## INDIVIDUAL LEARNING PROFILE

NAME Susakth Phachantha

MODULE NO. _____	PRE—TEST / LANGUAGE MEDIUM	INSTRUCTION / LANGUAGE MEDIUM	POST—TEST / LANGUAGE MEDIUM	TIME TO COMPLETE MODULE
1	0/Emql	Emql-1Fa	0, 75, 100% 1Fa.	3/05
2	—	E/F	66, 100% / Emql	1-55
3	—	E/F	33, 66, 100/E	8-10
4	—	E/F	33, 100/E	1-50
5	—	E/F	100/E	4-45
6	—	E/F	100/E	2-55
7	—	E/F	100/E	2-50
8	50% / E	E/F	100/E	4-00
9		F	100/F	1-25
10		F	90, 100/F	2-05

## INDIVIDUAL LEARNING PROFILE

NAME Yerra Nallaparth

MODULE NO. _____	PRE—TEST / LANGUAGE MEDIUM	INSTRUCTION / LANGUAGE MEDIUM	POST—TEST / LANGUAGE MEDIUM	TIME TO COMPLETE MODULE
1	25/E	Engl	75, 100/Engl	0-58
2	—	Thai	100/Thai	38
3	—	Thai	100/Thai	2-50
4	—	Thai	0, 100/Thai	1-14
5	—	Thai	100/Thai	0-48
6	—	Thai	100/Thai	1-25
7	—	Engl / Thai	100/Thai	2-50
8	0/Thai	Thai	100/Thai	2-05
9	50/Thai	Thai	100/Thai	11
10	—	Thai	100/Thai	1-07
11	—	Thai	100/Thai	2-41

(Inventory of Core Modules)

An "Inventory of Core Modules" is maintained to provide a record of how each module fares in the training programme, i.e., the language selected by each participant for instruction, the language used in the pre and post-test, the pre and post-test scores, and the time (hours and minutes) required by each trainee to complete the module.

The sample Inventory for Module 5 presented on the next two pages illustrates that trainees:

- (1) are using a variety of language mediums to master instructional objectives
- (2) take post-tests in a variety of languages
- (3) differ greatly in the time it takes to complete a Module.

# INVENTORY OF CORE MODULES

MODULE NO 5

NAME	PRE-TEST / LANGUAGE MEDIUM	INSTRUCTION / LANGUAGE MEDIUM	POST-TEST / LANGUAGE MEDIUM	TIME TO COMPLETE MODULE
Saleh	—	Ind / E	100 / Ind	3-45
Sukasni	—	Ind / E	100 / E	2-12
Sentot	—	Ind / E	100 / E	6-02
Um Pum	—	French	100 / F	3-15
Chau Lum	—	French	100 / F	3-35
Yung	—	E / F	100 / F	4-05
Susket	—	F	100 / F	4-45
Chantalath	—	E / F	66, 100 / E	3-05
Kanh	—	F	100 / F	4-10
Abang	—	E	100 / E	1-13
Sujan	—	E	100 / E	2-25
Rahman	—	E	100 / E	2-20

# INVENTORY OF CORE MODULES

MODULE NO 5

NAME	PRE—TEST / LANGUAGE MEDIUM	INSTRUCTION / LANGUAGE MEDIUM	POST—TEST / LANGUAGE MEDIUM	TIME TO COMPLETE MODULE
Edith	—	E	100/E	2-36
Ed	—	E	100/E	1-17
Fe	—	E	100/E	1-17
Mary	—	E	100/E	1-20
Jeng Min	—	E	100/E	1-10
F. Rahman	—	E	100/E	25
Kheim	—	E/F	100/E	4-00
Bung	—	E/F	100/E	55
Long	—	E/F	100/E	2-40
Yera	—	Thai	100/TH	48
Chad	—	Thai	100/TH	4-00
Sompong	—	Thai	100/TH	3-55

## (Progress of Translation)

French - Modules 1-14, Adjunct Modules A, B

Thai - Modules 1-13, no Adjunct Modules

Indonesia - All Modules - Adjunct A, B

All Modules for Instructional Technology Workshop are written in English. It is planned that participants will translate them into French and Thai as part of their learning experience.

## (Planned Material Development)

Core Modules 16-25 (on project management and strategies for change) are not yet designed. It is planned that they be designed and translated during the month of April.

Targets:

31 April	1973:	Complete production of Core Modules 16-25
		Translate Core Modules 16-25
1 June	1973:	Awards Ceremony
31 July	1973:	Revise Training Programme (Singapore)
30 September	1973:	Complete Revision (Saigon)
1 October - 22 December	1973:	First Saigon Training Programme
7 January - 6 April	1974	: Second Saigon Training Programme
22 April - 20 July	1974	: Third Saigon Training Programme

Evaluation:

The March - June 1973 individualized instructional programme is a success. The October - December 1972 course also proved to be a valuable learning experience for participants, but too many trainees were left behind by the traditional lecture method of instructions as a result, numerous remedial sessions

had to be conducted. All participants in the present course are progressing at different rates, but all are keeping up.

Even though training materials are still being produced and translated, the proportion of professional staff time devoted to training is now below 25 per cent. Our target of 15-20 per cent, after the move to Saigon, is fast becoming a reality.

2. Ten-month Intern Programme
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- Purposes:**
- (1) Provide educators with both educational planning and research skills.
  - (2) Provide practical research experience by including interns as temporary staff members following a three-month orientation course.
  - (3) Upgrade English Listening Comprehension Skills to enable interns to work as staff members.

**Targets:** October - December 1972

Interns take part in three-month programme.

January - June 1973

- (1) Involve interns as part-time staff members in the following activities:
  - ... revision of training, including translation of main points of each module into local languages,
  - ... revision of the TECH programme,
  - ... conduct of comparative-objectives study,
  - ... conduct of life-relevant objectives study,
  - ... conduct of programmed-teaching study.
- (2) The intern programme will terminate on 15 June 1973.

**Progress:** All interns completed both the TECH programme to upgrade English listening comprehension and the three-month (October-December 1972) programme of formal course work on educational planning. Interns are currently adjunct staff members assisting the professional staff as follows:

- (1) Participation in the development and operation of the current three-month training programme:

Mr. Ibrahim Musa	(Indonesia)
Mrs. Oum Sam	(Khmer Republic)
Mr. By Boeun	(Khmer Republic)
Mrs. Anne Chi Eng Guan	(Singapore)
Miss Noulchant Potar	(Thailand)

## (2) Assisting in the research study on Programmed Teaching:

Mr. Moua Lia	(Laos)
Mr. Ishak bin Khamis	(Malaysia)
Mr. Khamis Noyo	(Malaysia)

## (3) Assisting in the Comparative Study of Educational Objectives in SEAMEO countries:

Mr. M. Sudomo	(Indonesia)
Miss Luningning F. Mangalindan	(Philippines)
Mr. Prachak Deeprawat	(Thailand)
Miss Tran Thi Bich San	(Vietnam)

## (4) Assisting in the research on Models for Deriving Life-skills Objectives:

Miss Sanith Manirath	(Laos)
Miss Helen Manampan	(Philippines)
Mr. Teo Eng Chuan	(Singapore)
Mr. Thai Quang Hoan	(Vietnam)

Evaluation: Some interns have been particularly useful staff members, and some have lacked the research and language skills to serve effectively. However, all have attempted to do their best, and all have improved as they have learned more. One indication that some interns have been particularly effective in our judgment is that we have invited four of them to remain on the INNOTECH staff next year.

## INFORMATION EXCHANGE

### Introduction

### INNOTECH Newsletter

### Seminars

AED/INNOTECH Seminar on Educational Technology  
Regional Seminar on Effective and Economical  
Delivery of Mass Primary Education  
Future Seminars

### Research Reports

Introduction
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The purpose of an information exchange service by INNOTECH is to provide member countries with the information and the ideas which can aid and stimulate needed educational improvements. INNOTECH has attempted to provide this service in three ways:

- (1) The INNOTECH Newsletter.
- (2) Seminars which bring together key educators to make presentations and participate in discussions on educational topics relevant to the SEAMEO region.
- (3) Research reports which describe results of INNOTECH's research activities.

Progress related to these five activities is reported herein under the following headings:

- ... PURPOSE
- ... SUMMARY DESCRIPTION, including RATIONALE when appropriate
- ... TARGETS (planned accomplishments)
- ... PROGRESS (toward targets)
- ... EVALUATION, particularly in reference to INNOTECH's role in serving the region.

<b>INNOTECH Newsletter</b>
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- Purposes:**
- (1) Collect and disseminate information on new educational developments in the region.
  - (2) Disseminate information on relevant new development outside the region.
  - (3) Inform educators in the region of INNOTECH concepts and activities.
  - (4) Increase the awareness and credibility of INNOTECH in order to
    - ... stimulate new ideas,
    - ... attract increased external support,
    - ... attract qualified staff members and visiting scholars,
    - ... attract outstanding presenters and participants to regional seminars,
    - ... create an interest among key educators to participate in INNOTECH training programmes.

**Summary Description:** A two-color newsletter is to be published monthly to include the following sections:

- ... a lead article on one current INNOTECH activity,
- ... a column by the Center Director concerned with a variety of activities and plans at the Center,
- ... two summary descriptions of new educational developments in the region (including the addresses of persons to write for additional information,
- ... an article by a professional staff member on a subject related to educational topics encompassed by INNOTECH,
- ... a list of available publications,
- ... a calendar of future activities in which the Center will be involved, and
- ... an occasional 2,000 words description of a new educational development outside the SEAMEO region.

**Target:** Publication of 2,500 copies on the first of each month (July and August 1973 excepted because of our projected move to Saigon).

**Progress:** The 1 December through 1 April Newsletters are attached (next page).

**Evaluation:** None to date.





# INNOTECH NEWSLETTER



Vol 1, No 2. SEAMEO REGIONAL CENTER FOR EDUCATIONAL INNOVATION AND TECHNOLOGY November 1972

We in Seameo are dedicated to the concept of regional co-operation in seeking solutions to our pressing educational problems. However, in implementing this co-operation we have created a problem of our own — communication. We who come together in regional centres must communicate in a common language, English. A number of centres, Innotech included, have indicated that their training efforts are severely handicapped by the inability of some trainees to understand spoken English, particularly the technical language and concepts which we must use. In recognition that many of its centres are handicapped to varying degrees by this problem, Seameo requested that Innotech develop an instructional programme which could serve as a prototype for adaptation to the other centres.

The programme (titled the TECH Programme) is now being tried out at Innotech by the 16 Interns who arrived on the 18th of September. The Intern Programme is held each year at

## TECH PROGRAMME

Innotech and covers a 10-month period. Interns are "adjunct staff members" in that they are involved actively in research projects. They are also "trainees" in that they participate in regular courses and are given tutorial help by the professional staff. In this dual role, the interns will become invaluable to the tryout and revision of the aural comprehension programme. When revisions are completed, the programme will be sent to other Seameo centres along with recommendations for adapting it to their unique English Comprehension needs.

The programme actually was initiated by an Innotech intern, Mr. Teo Meng Tech, Inspecteur Primaire, Direction de l'Enseignement, Khmer Republic. In preparation for his one-year stay at Innotech, Mr. Tech developed a programme for his own

use to increase his English proficiency. He listened to news broadcasts in English over Voice of America and checked his comprehension by listening to a second broadcast in Special English, a simplified form spoken slowly.

During his stay at Innotech, this self-teaching exercise was expanded into a research and development project. He and seven other interns undertook the development of a formal self-instructional programme to teach English comprehension. The programme uses cassette tape recorders and requires no teachers, so that it can be used anywhere.

Lectures and discussion materials ranging from a paragraph to a 20-minute lecture are recorded on tapes. After listening to this material the learner answers questions which allow him to evaluate his own performance. Depending on how well he has understood the material on the tape, he goes on to the next tape or he is directed to further exercises to improve his proficiency.

The programme has a double purpose. The material recorded on tape for this programme is part of the Innotech Syllabus, so that as a participant improves his proficiency in English he is also acquiring much of what he came to Innotech to learn.

Not only does the programme have a double purpose, its name has a double meaning. TECH is not only the name of its instigator, Mr. Tech, but it also stands for Technical English Comprehension (Hearing).



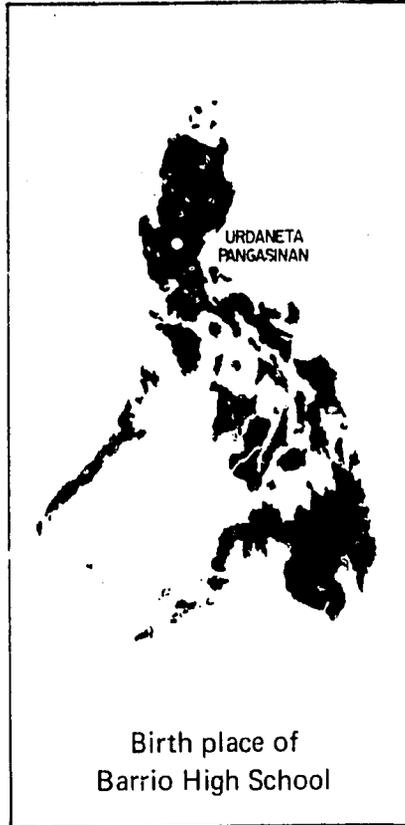
Miss Noulchant Potar (Thailand) with TECH Programme

## PHILIPPINES

# BARRIO HIGH SCHOOLS

In 1964 the Philippines had a well developed system of primary and secondary education, but only those who lived in the cities could afford to go to secondary school. Poverty made secondary education unattainable for children living in rural areas.

Dr. Pedro T. Orata, after a successful career as teacher, UNESCO official, and Senior Educator, found a unique solution to this problem. He developed what is now widely known as the "Barrio High Schools." These schools take many forms to make use of local resources and the talents of local people. Available elementary school buildings are used before and after school hours, or whenever the rooms are free. Also, science equipment, tools for the shop and garden and the home economics, kitchen and facilities are utilized whenever the elementary school children are not using them. Where new science equipment is needed the students improvise it. Basic teaching is done by high school teachers from elsewhere who have some time to



Birth place of  
Barrio High School

in carrying out the projects is used to pay his tuition fee, book rentals and other expenses. Deficits are made up by the parents who underwrite the projects in contracts signed by the child, the parent and the school officials.

While public high schools usually depend entirely on the government for financial support, the barrio high schools operate at almost no cost to the government.

Because of their practical training and the time spent on projects, the barrio high school students have less class time than is common in public high schools. Yet achievements of many barrio high school students are comparatively high.

Needless to say that Dr. Orata's efforts bore fruits. So great was the enthusiasm of parents, children and the local community that within the short span of seven years the number of barrio high schools, now spread all over the country, has increased from 4 to 1500. The number of children taught in these schools has increased from 400 to more than 250,000.

For more details about this exciting project, please write to: Dr. Pedro T. Orata, Consultant, Dagupan Colleges, Urdaneta, Pangasinan, Philippines.

## new developments in the region

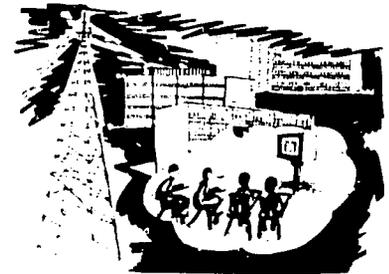
spare, by elementary school teachers with special training or interests, or by members of the community with appropriate skills. The district supervisor, who is responsible for five to ten or more elementary schools, coordinates the work at the elementary and high school levels. Each of these teachers and supervisors is given a small honorarium in addition to their monthly salaries.

The Barrio High School curriculum includes many practical subjects in addition to the conventional academic subjects. For instance, each child, under supervision and guidance of teachers, employers, and other members of the community, carries out a money-making project, such as raising pigs, chickens, cattle, or vegetables and fruits. Planning, accounting, report-writing and other project activities are integrated with the academic components of the curriculum. Money earned by the child

## SINGAPORE

# EDUCATIONAL TELEVISION

Jimmy Lim is in the first year of Secondary School. His interests are mainly in mathematics and science, and he is looking forward to school today with great enthusiasm. Although his teachers are good, he is getting far more out of these two subjects than either of his teachers could give him by themselves. For example, he knows that at 9:25 this morning he and his classmates are going to see and hear an educational TV programme on mathematical puzzles. And again at 11:05 this morning they will view a programme which summarizes this week's science studies. Of course,



Jimmy doesn't learn all of his Science or his Mathematics by ETV; they

### ETV PROGRAMME

7.50 a.m.—8.10 a.m. General Science Sec. 2—Summary Programme; 8.30 a.m.—8.50 a.m. English 2nd Lang. Sec. 2—The Hans' new Piano; 9.05 a.m.—9.25 a.m. Mathematics Sec. 1—Maths Puzzles; 9.45 a.m.—10.05 a.m. National Lang. (Elem.)—Bernain2 di-Pantai; 10.45 a.m.—11.05 a.m. General Science Sec. 1—Summary Programme; 11.20 a.m.—11.40 a.m. General Science Sec. 2—Summary Programme; 11.55 a.m.—12.15 p.m. Geography (Ch.) Sec. 2—Rice Cultivation; 12.30 p.m.—12.50 p.m. English 2nd Lang. Sec. 1—Getting ready for Deepavali.  
1.15 p.m.—1.35 p.m. General Science Sec. 2—Summary Programme; 1.50 p.m.—2.10 p.m. General Science Sec. 1—Summary Programme; 2.25 p.m.—2.45 p.m. English 2nd Lang. Sec. 2—The Hans' new Piano; 3.00 p.m.—3.20 p.m. Geography (Ch.) Sec. 2—Rice Cultivation; 4.00 p.m.—4.20 p.m. National Lang. (Elem.)—Bernain2 di-Pantai; 4.35 p.m.—4.55 a.m. English 2nd Lang. Sec. 1—Getting ready for Deepavali; 5.10 p.m.—5.30 p.m. Geography (Ch.) Sec. 2—Rice Cultivation.

## DIRECTOR'S CORNER



by LY CHANH DUC

This is the second issue of our Newsletter. I hope you will like it, at least as much as the first. A fair amount of staff time and effort has gone into this publication, and we do need your encouragement in terms of comments and suggestions, to keep on going.

So far, we have good indications that the thirty-seven participants of our current 3-month programme are finding the course pretty close to their expectations. And they do contribute useful ideas to the overall objectives of the Center, too. A recent free-for-all brainstorming session, for instance, generated some 234 uncritical ideas as to how to solve the problems of high primary school drop out rates. It is to be expected that, when evaluated and refined during the course, one or two of those ideas may become the basis for further development.

The brainstorming results are only one indication of the abilities and enthusiasm of the participants. Each has now begun work on an individual on-the-job problem to which the systems approach will be applied in an attempt to develop a solution. Five regional problems also are being attacked with vigour by five separate working groups which are truly international; all Seameo countries are represented in each group. We intend that the products of these efforts be published at the end of the programme in December.

The lead article this month is on the TECH programme which is being developed by three of our staff members to meet the need for improving English listening comprehension among training programme

participants. The work of Dr. Douglas G. Ellson, Mr. Chiam Tah Wen and Miss Le Thi Kim Hai has been well-received by those who are here for training. Those in most need of English improvement are listening and relistening to the TECH programme on cassettes, often checked them out for home study. Even persons whose English comprehension is good are using these materials because the content is directly related to Innotech training. We will have a sequence of 50 separate programmes in the near future.

The two educational developments in the region being featured this month are the Barrio High Schools in the Philippines and the very successful Educational Television Service of Singapore. We would be very appreciative if educators in Seameo countries would send descriptions of other new developments for publication in this Newsletter.

On the back page is an article by Dr. Duong Thieu Tong on force and resistance in educational change. Dr. Tong, Coordinator of Research at Innotech, gives us a new viewpoint on the business of being a change agent. It is fitting that all of us be continuously reminded that innovative solutions are not sufficient in themselves; they must be accepted before they can effect educational improvement. Even the first Model-T Ford had to be proved to a doubting public.



Three-month programme Interns and Participants

provide supplemental learning to his regular courses. But they do provide real enrichment and real excitement to students such as Jimmy, and they give these students learning experiences which they otherwise could not have. No single school could possibly afford the science experiments which they can see directly on television. Jimmy is a lucky lad because he lives in Singapore. Although the country is small, it has the distinction of being the first country in Southeast Asia to utilize ETV on a nation-wide basis.

The ETV Service offers 388 programmes annually for transmission

from 0750 to 1730 during weekdays and from 0800 to 1115 on Saturday. In addition to school broadcasts, two adult educational programmes also are transmitted four evenings each week. "Telelessons" for schools provide coverage for primary grades 1 through 5, secondary I and II, pre-university and technical III and IV classes.

Jimmy Lim is only one of 350,000 students benefitting from the Educational Television Service. Jimmy is a lucky lad, and so are the other students of Singapore.

For further information, please contact: Mr. Peter Seow, Head, ETV

Service, TTC, Paterson Road, Singapore 9.

Innotech invites persons in SEAMEO countries to send short summaries of new educational developments for inclusion in this Newsletter. From those selected, INNOTECH will take the responsibility for final editing. It is through information exchange such as this that we all may benefit.

# FORCE AND RESISTANCE...

Exerpts from a presentation by D.T. TONG

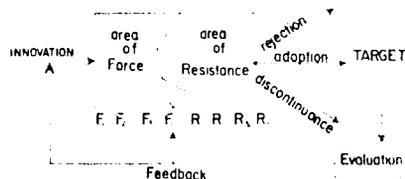


**E**ducation in Southeast Asia is undergoing a continuous process of change, and this process is not a simple one. Changes do not occur simply because someone has a good innovative idea to improve education. Every innovation is subject to the dual factors of FORCE and RESISTANCE. The interplay of these factors creates an equilibrium which determines the fate of any given innovation.

The fate of a given innovation, be it adoption and transformation, rejection or discontinuance, will depend to some degree on the nature of the innovation itself, but it will depend to a larger degree upon the nature of the target system into which it is to be

introduced. The target may include a school, a teacher or a pupil, each of which represents a variety of factors related to FORCE and RESISTANCE. School factors can include community customs and financial condition; teacher factors can include training and personality; pupil factors can include abilities, interests and family conditions.

This point can be illustrated by the diagram below which shows FORCE as  $F_1, F_2 \dots F_n$  and RESISTANCE as  $R_1, R_2 \dots R_n$ . Suppose that we feel that there is not enough teacher-pupil interaction in the classroom of our school, and that we want to see a change from the lecture method to methods involving teacher-pupil planning and more pupil participation.



When this change is introduced into the school system, there may be several forces which point toward more teacher-pupil interaction in the classroom, namely:

- (i) a progressive philosophy of education on the part of the school principal and a large number of people in the community (F1 for the school as a target)
- (ii) teachers want to train students in the way of living as citizens in a democracy (F2 for the teacher as a target)
- (iii) the desire for freedom in making decisions on the part of the pupils (F3 for the pupil as a target)

## INNOTECH CALENDAR

30 October – DSE Seminar on Instructional Materials (to be held at the RELC in Singapore)

14 November – 4-day Innotech Governing Board Meeting

27 November – December 1 – Meeting of Project Directors and High Officials (to be held in Bangkok)

But, at the same time, there are also other factors which seem to be opposed to change in that direction (Resistance), such as:

- (i) the rigidity of the curriculum, the class schedule, the examination requirements (R1 of the school as a target)
- (ii) teachers lack of training and skill in directing group discussions and in methods of planning cooperatively with pupils (R2 of the teacher as a target)
- (iii) Pupils have little skill in group discussion and in planning together (R3 of the pupils as targets)

Force and resistance, in opposition to each other, determine the fate of the innovation. The result of these interactions might be:

- (1) The rejection of the innovation in toto, when the driving forces are insignificant as compared to the resistance to them.
- (2) The partial adoption of the new method, when the driving forces are superior or equal to their resistance.
- (3) The discontinuance of the new method after it has been practised for some time.

The equilibrium which initially determines the fate of an innovation once an innovation is accepted can be changed by the target. The results of the innovation itself may provide feedback either to increase the force or the resistance to its continuance.

## PUBLICATIONS

The following publications will be available soon:

1. Regional Practicum on Alternatives in Education-Final Report
2. AED/INNOTECH Seminar on Educational Technology-Final Report
3. Selected Educational Projects in SEAMEO Countries
4. Volume I: Critical Classroom Behaviors of Teachers.  
Volume II: Teacher Training in Critical Classroom Behaviors
5. The Primary School Readiness Testing: Feasibility Study
6. Self-help Barrio High Schools: The Story of 250,000 students learning their education, by Dr. Pedro T. Orata.

REGIONAL INNOTECH CENTER  
39 NEWTON ROAD  
SINGAPORE 11

# SEAMEO/DSE CONFERENCE

**I**N RESPONSE to the urgent need for alternatives in our educational system, a one-week conference on the Problems of Promotion and Production of Teaching Materials was recently held at the Regional English Language Center in Singapore.

The Conference hosted by INNOTECH was jointly sponsored by the Southeast Asian Ministers of Education Organisation (SEAMEO) and the Deutsche Stiftung für Entwicklungsländer (DSE), the German foundation for developing countries.

The major objective of the conference was to exchange information on existing instructional materials and services in order to achieve better intra-regional and inter-regional cooperation as well as international communication between producers, administrators and "consumers" of teaching materials and equipment.

Three working groups were organised to make in-depth reviews of problems related to teaching materials and to generate recommendations. The three groups were concerned individually with: 1) science equipment 2) audio-visual materials and (3) printed materials.

The final recommendations of the Conference were:

1. That the findings of the Conference be submitted to the member countries of SEAMEO for their information and action as may be deemed appropriate in the light of the conditions and needs prevailing in the individual countries.
2. That SEAMES, in collaboration

with the existing SEAMEO Regional Centres, take appropriate steps to deal with the problems identified by this Conference, taking into account the various proposals and suggestions of the Working Groups.

3. That teacher training programmes give more emphasis on the use of hand-tools, simple repair and maintenance and utilisation of teaching materials.
4. That facilities for design, production and distribution of low-cost teaching materials in SEAMEO member countries be established and/or improved.
5. That the work of curriculum developers and designers of teaching materials be more closely coordinated and related to the educational objectives of the SEAMEO member countries.
6. That the facilities for

dissemination of information concerning teaching materials be improved and expanded, making optimum use of the clearing house services of the existing SEAMEO Regional Centres and in the SEAMEO member countries.

7. That training programmes in the design, production and utilization of teaching materials be expanded and improved in the SEAMEO Regional Centres.
8. That SEAMEO develop further the possibilities for cooperation and assistance, both in and out of the region, in regard to provision for scholarships, equipment and expertise for the design, production and utilization of teaching materials.
9. That, as a follow-up of this Conference, priority be given to

*Continued to Page 3*

*Some of the attentive faces at the SEAMEO/DSE conference*

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# THU DUC DEMONSTRATION SCHOOL

## VIETNAM

**T**HE THU DUC Demonstration School was opened in 1965 with an enrollment of 240 pupils in grades 6 and 7. Like other traditional secondary schools in Vietnam, the Thu Duc School comprises two cycles. The first consists of a four-year course aimed at giving the pupils a general education and at exploring their abilities while the second covers a three-year period of specialisation.

Upon completion of the second cycle, the successful students will receive Thu Duc High School diplomas in such branches as Literature and Languages, Mathematics and Sciences, Experimental Sciences, Industrial Arts, Business Education and Agriculture. These diplomas are officially recognised by the Ministry of Education and by all educational institutions and are equivalent to the Baccalaureate Part II

in every respect.

What makes the Thu Duc Demonstration School so special is that it is the first one whose curriculum is planned by the school staff and the Faculty of Pedagogy to which it is attached. It does not follow the uniform curriculum prescribed by the Ministry of Education as do all other schools throughout Vietnam.

The curriculum is restricted not only to the selection and content of courses but it also includes all activities necessary for the child to fully develop morally and mentally in accordance with the main objectives of the country's education.

The curriculum places emphasis on the following:

- a programme of guidance and counselling, testing and measurement
- a practical arts programme
- a student activity programme

The Faculty of Pedagogy and the staff of the School are making joint efforts in studying and experimenting with necessary modifications so that



after graduating from the School, students will be fully prepared for jobs and/or for university education in the country and abroad.

One of the key factors in the successful implementation of the Thu Duc School project is the assistance of the Parents Teachers Association (PTA) in dealing with the problem of bus transportation (recruiting drivers, maintenance and repair of buses, arranging bus schedules) and other administrative matters.

Plans are now underway to undertake two important tasks: to train teachers in the techniques of research and evaluation and to develop a comprehensive evaluation programme.

The Thu Duc Demonstration School has now 1,000 pupils in grades 6 to 12. Its aim is to serve as a pattern for future Vietnamese secondary schools.

For further information please contact: Mr. Duong Van Hoa, Principal, Thu Duc Demonstration School, Saigon, Vietnam.

## new developments in the region

# ENGLISH LANGUAGE CENTER

## THAILAND

**T**HE NEED for English competency at university level is prevalent in many of the countries in the Seameo region. English is the main vehicle for communication among countries and for higher education both within and without the region.

Thailand has responded to this need by a strong commitment from the University Development Commission to develop a permanent Center to house and instruct 1,000 students by 1978. An interim target is to provide for 600 students by the end of 1974.

Hence the establishment of the English Language Center with two



main objectives:

- to provide intensive courses suitable to the needs of various categories of students, aimed at giving them a knowledge of English sufficient to pursue higher studies both in and out of the country.
- to improve the quality and help increase the quantity of English teaching at all levels, by providing both content and methodology training.

The operations of the Center focus on providing intensive year round courses to:

- teaching staff of universities and institutions of higher education.
- university teaching staff who are

- to be sent abroad for study
- government officials who are being sent by government agencies to study further in and out of the country
- first and second year university students who have good academic records
- persons receiving government scholarships to study abroad
- persons from private sectors who are training to be high level administrators

In addition ELC provides training for English teachers, produces instructional materials, conducts research in language teaching and coordinates with other organisations (such as the Regional English Language Center in Singapore) who are concerned with the teaching of English.

For further information please contact: Director, English Language Center, University Development Commission Office of National Education, Bangkok, Thailand.

## DIRECTOR'S CORNER

BY LY CHANH DUC



**O**UR STAFF has been extremely busy lately because of two important meetings. I am thankful to those who have put in considerable extra work in getting this issue out in time.

The first meeting mentioned above was the one-week Regional Conference on the Problems of Promotion and Production of Teaching Materials. Jointly sponsored by SEAMEO and DSE, INNOTECH is honoured to have hosted this conference, the story of which constitutes the lead article of this issue.

The second function was the Seventh Meeting of our Governing Board. The future of Innotech under various aspects was discussed extensively. The Board adopted a clear-cut direction of the Center's activities and among other things whole-heartedly endorsed two major research projects which the Council of Southeast Asian Ministers of Education (SEAMEC) wishes to entrust to the Center.

The first project relates to *what* children learn. More than half the children in our region do not go beyond primary school, and it is imperative that their learning experience prepare them to lead lives that are rewarding to themselves and to the society in which they live.

This project therefore is designed to determine what the important educational objectives are for children who cannot go beyond primary education. The Center is anxious to work with member nations on this task.

The second project relates to *how* children learn. How can our countries provide an effective primary

education to all our children? It is their right to learn to gain this education; it is our duty to find ways to provide it. Cost studies leave no doubt that conventional teaching methods cannot possibly provide this needed mass education with the resources that are available in this region.

Effective and economical alternatives to the conventional classroom, teacher and textbook must be found. The search for this exciting task has been assigned to Innotech. We accept the challenge!

The two regional developments summarized on these pages are the Thu Duc (no relation) Demonstration School in Vietnam and the English Language Center in Thailand. The Thu Duc School, with its emphasis on individual development and parental involvement is a clear demonstration that some of our traditional elitist pedagogical ways are being replaced. The English Language Center is Thailand's answer to the need to provide tertiary level English skills for those who intend to pursue an university education at home and overseas.

On the back page, Dr. Douglas Ellson presents some compelling research results which show what educational technology can do if properly designed. Dr. Ellson has been on our staff for the past year and has been a strong and persistent proponent of well-conducted research in educational technology.



*The Governing Board Meeting in progress*

*From Page 1*

*the holding of workshops with the participation of agencies/ organizations/foundations such as UNESCO, UNICEF, UNDP, DSE, etc. in such areas as design and production of low-cost:*

- (a) Printed materials*
- (b) School science equipment*
- (c) Science teaching equipment*
- (d) Audio-visual materials.*

The closing remarks of Dr. Sippanondha Ketudat, deputy director of SEAMES typified the functional

cooperation that prevailed throughout the Conference. He was gratified that the Conference "had directed itself to the down-to-earth problems of how to make our Southeast Asian children learn more effectively." He thought that the strength of SEAMEO lies in regional cooperation and its success is due to the fact that "we look for similarities," and he reiterated the statement made in his opening address that SEAMEO is always prepared to welcome ideas and inspiration from outside.

Innotech invites persons in SEAMEO countries to send short summaries of new educational developments for inclusion in this Newsletter. From those selected, INNOTECH will take the responsibility for final editing. It is through information exchange such as this that we all may benefit.

# The role of educational technology

BY DOUGLAS ELLSON



**H**OW CAN educational technology increase the effectiveness of teaching and decrease its cost?

Before answering this question it should be clear that "educational technology" means more than the use of machines and other hardware — television, audio-visual aids and teaching machines. It may include machines or it may not, and in most applications nowadays, it does not. Properly defined, educational technology is the systematic application of scientific knowledge to the process of teaching. The sciences that are applied include the science of psychology and the science of management far more often than the physical sciences.

Six recent experiments in education, selected from a much larger number with similar results show that

educational technology so defined can multiply the effectiveness of teaching by factors which range from 2 to 13 and produce comparable reductions in its cost.

## The Six Experiments

1) The effectiveness of programmed instruction using teaching machines was compared with a conventional method for teaching retarded children to read. The gains in reading vocabulary achieved by the groups taught by programmed techniques were 9 times and 13 times as great as those achieved by children in the traditional classroom.

2) First grade children were given supplementary tutoring in reading for 15 minutes a day by non-professionals using a programmed technique. The proportion of non-readers in the class at the end of the year was reduced from 10% to less than 1%.

3) Pre-school children were taught qualitative and quantitative concepts orally by means of programmed teaching. A year later, gains in IQ for this group were three times the gains for a control group taught by conventional methods. The proportion of children above the national average in reading achievement was three times and the proportion above average in arithmetic achievement was nearly twice that of the control group.

4) Military recruits with no previous experience, were taught electronics theory in a programmed course supplemented by stop work. By the end of 14 weeks, each student had built a square generator and his own tele-

vision set.

5) Programmed self-instruction was used as part of a classroom procedure to teach algebra to eighth-grade children in an American city. The students completed the course in half the time normally required by ninth-grade children and only one child in the entire school system failed to perform satisfactorily on a standardized examination.

6) The well-known Open University of Great Britain utilises programmed self-instruction (note: not teaching machines) for 90% of its instruction. The performance of its students on external examinations is comparable to that of other British Universities. However, the cost per student was one-fifth as great.

The common factor in these experiments is the use of educational technology to greatly modify the role of the professional teacher. One or more of the three major teaching functions are delegated to someone or something other than the classroom teacher — planning to a group of experts (including master teachers), transmission of information to teaching materials (usually programmed) and control of the students' learning activities to programmed instructions included in the teaching materials or to non-professionals whose teaching activities were controlled by programmed instructions.

Educational technology definitely *can* increase the effectiveness of teaching and decrease its cost.

Merry  
X'mas  
from  
Innotech

REGIONAL INNOTECH CENTER,  
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# INNOTECH NEWSLETTER



Vol 1, No. 4 SEAMEO REGIONAL CENTER FOR EDUCATIONAL INNOVATION AND TECHNOLOGY January 1973

## Seminar on mass primary education

This coming February Innotech will host a regional seminar in Singapore on a topic of vital importance to most countries in Southeast Asia: how to provide primary education for the majority of children in this region, more than half of whom currently are either denied the opportunity for education or have to forfeit this opportunity sooner than they should.

Educators are well aware of the futile efforts to meet this need with traditional approaches. As a matter of fact, a computerized guess estimates that it would take about 180 years to educate all the children of Southeast Asia alive today using conventional approaches and existing facilities. The problem becomes overwhelming when other factors such as the ever-growing population, the explosion of knowledge, the manpower needs for national development, outdated curricula, and the like, are taken into consideration.

Are there answers? The purpose of the February seminar will be to explore all possible answers – all new approaches and ideas which may lend themselves to meeting the basic educational requirements of the children in this region. The persons who will participate in the seminar are those who either are trying new approaches or have made systematic studies of a variety of alternative approaches. Their presentations and interactions at the seminar may help generate more constructive

“rethinking of the educational system”, as Mr. Rene Mahue, Director-General of UNESCO, has suggested.

Three educators from each of the Seameo member countries will be invited, one of whom will be asked to present a paper on a selected topic

related to the theme of the seminar. In addition, invitations are also extended to three or four educators from outside the region (from Africa, Asia, North and South America); these persons are specialists in the field, and will be expected to share their

*Continued to Page 3*



## SINGAPORE

Visitors to Singapore hotels are often gratified by the quality of service provided them. One reason for these high standards, is the Hotel and Catering Training School which has trained more than 2,000 young people since its inception in 1967. The School is unique not only in levels of training which it provides, but also in its setting: the School entirely staffs the moderately-sized Hotel Premier in Singapore. Accommodations, food and service at this hotel are among the best in the city.

The objectives of the Hotel and Catering Training School are to provide basic training in hotel and catering skills and to improve the knowledge and skills of persons currently employed on hotel or catering staffs.

Courses are divided into three stages:

Stage (1) – **Basic Level:** Students enrolled at this level are holders of a Senior Cambridge Certificate. They are trained to become waiters, room stewardesses, trainee cooks,

# HOTEL AND CATERING TRAINING SCHOOL

receptionists.

Stage (2) – **Middle Technical Level:** Training at this stage leads to skills in the supervision of restaurants, bars, housekeeping departments or front offices.

Stage (3) – **Upper Technical Level:** Training at this stage leads to the position of Assistant Manager.

The courses last from 3 to 12 months, depending on the type of courses and the level of training:

Basic Food and Beverage Service Course – 3 months

Basic Housekeeping Course – 9 weeks

Middle Technical Food & Beverage Services Course – 6 weeks

Middle Technical Housekeeping



Course – 6 weeks.

As the number of hotels in Singapore increases, the demand for hotel personnel grows. Graduates from the School thus have no problem finding jobs. Those in the middle and upper levels usually come to the school for upgrading and typically resume their old jobs after completion of their training. The excellence of the training received is evidenced by the demand for graduates by local hotels. As more and more trainees graduate, visitors to Singapore can look forward to increased quality of hotel service.

For more information please contact: Mr. Patrick Chia, Hotel and Catering Training School, Nassim Hill, Singapore 11.

## new developments in the region

## PROJEK KHAS

### MALAYSIA

In 1969 a project for primary science and mathematics in Kuala Lumpur, Malaysia, was established. It was called Projek KHAS.

Projek KHAS, introduces improved methods of teaching science and mathematics in primary schools.

The project is unique in that it does not adapt or adopt any foreign materials for local use. Foreign curriculum materials are used as reference resources only in producing the project's own material.

It has developed numerous teaching aids utilizing resources that are inexpensive and locally available, such as:

1. Simple balances, abaccuses, discs, etc.
2. Mathematics board, for example peg boards, fraction boards, etc.



3. Simple cages for rearing small animals.

4. Simple devices for utilizing scrap materials.

All curricular materials are directed toward local conditions, especially in the biological areas. Projek KHAS gives great importance to the rearing of small animals and keeping of living plants in the classrooms and observing their behaviour.

Project personnel are trained to work at "centres of excellence" throughout the country. Their task is to run in-service courses, visit schools, show how various types of apparatuses work and observe and talk with the teachers.

There are at present 132 centres for in-service Field Training of Teachers. Each training centre is a

specially selected school located in a district surrounded by about 15 to 20 schools, known as "Cluster Schools." The key personnel who conduct the in-service training at the district levels are trained centrally in Kuala Lumpur by the Projek KHAS Staff.

Projek KHAS maintains constant liaison with primary teacher training colleges in an effort to obtain greater utilization of its methods and products by primary school teachers.

Teacher-Guide sheets are sent to all the training colleges. Science and Mathematics lecturers in the six primary training colleges are periodically invited to the Centre for seminars on the use of these guidesheets. Coordination efforts of this kind ensure that Projek KHAS will have maximum utility in the schools and that the feedback provided by the schools will continue to improve the project itself.

If you like to know more about this project, please write to: The Director, Science Centre, Ministry of Education, Jalan Damansara, Kuala Lumpur, MALAYSIA.

## **NON-REGIONAL EDUCATIONAL DEVELOPMENTS**

— AN INFORMATION EXCHANGE  
SERVICE OF INNOTECH

# **INDIA PLANS SATELLITE USE FOR ADULT EDUCATION IN REMOTE VILLAGES**

In September 1969 the Indian Department of Atomic Energy (DAE) and the U.S. National Aeronautics and Space Administration (NASA) signed a joint agreement to conduct a Satellite Instructional Television Experiment (SITE) using the Applications Technology Satellite "F" (ATS-F). Under the agreement the satellite will service a portion of the U.S. for approximately nine months scheduled to begin in the Spring of 1974; India will use the satellite for a year beginning in 1975. A brief outline of some of India's plans to date follows:

### **Objectives**

According to a paper presented in May of 1971 by members of the staff of the Indian Space Research Organization at the Broadcast Satellite Conference in Nice, France, the Indian instructional television programmes would try to disseminate information about population control, to popularize new methods to increase agricultural productivity, and to contribute to national development. Its secondary instructional objectives would be to contribute to general school and adult education, to contribute to teacher training, to improve other occupational skills, and to improve health and hygiene.

**Family planning** — The government of India has accorded top priority to the population control problem, including the development of a multi-faceted programme which will depend for its success on making people aware of family planning and then motivating them to practice birth control.

**Agricultural practices** — The government hopes to popularise new agricultural methods in order to increase productivity. This experiment will seek to inform the villages of progress and experimentation in agriculture — in seed improvement, crop rotation, water use, farm management, fertilisers, pesticides, rodent control, marketing, credit and weather information.

**National integration** — The experiment will use creative programming and the unifying force of Indian culture to transmit the experience of one region to another. It is designed to impart to isolated individuals and communities a wider sense of participating in national affairs, and to foster change in intellectual and social attitudes.

### **Indian Technical Objectives**

The SITE technical objectives are to provide a system test of broadcast satellite television for national development; enhance Indian capability in the design, manufacture, deployment, installation, operation, movement and maintenance of village TV receivers; gain experience in the design, manufacture, installation, operation and maintenance of broadcast and/or distribution facilities to the extent that these are used in the experiment; gain an opportunity to determine optimum receiver density, distribution and scheduling, techniques of audience attraction and organisation; and to solve problems involved in developing, preparing, presenting and transmitting TV programme material.

### **Distribution**

Broadcasting is scheduled to begin in mid-1975. Television programmes will reach an estimated 4 to 5 thousand Indian villages in eight languages: Hindi, Kashmiri, Bengali, Oriya, Marathi, Gujarati, Tamil, and English. About half of the villages will receive programmes from the satellite through community receivers. The remaining villages will be provided programmes received by earth stations and redistributed to community receivers via VHF conventional transmitters.

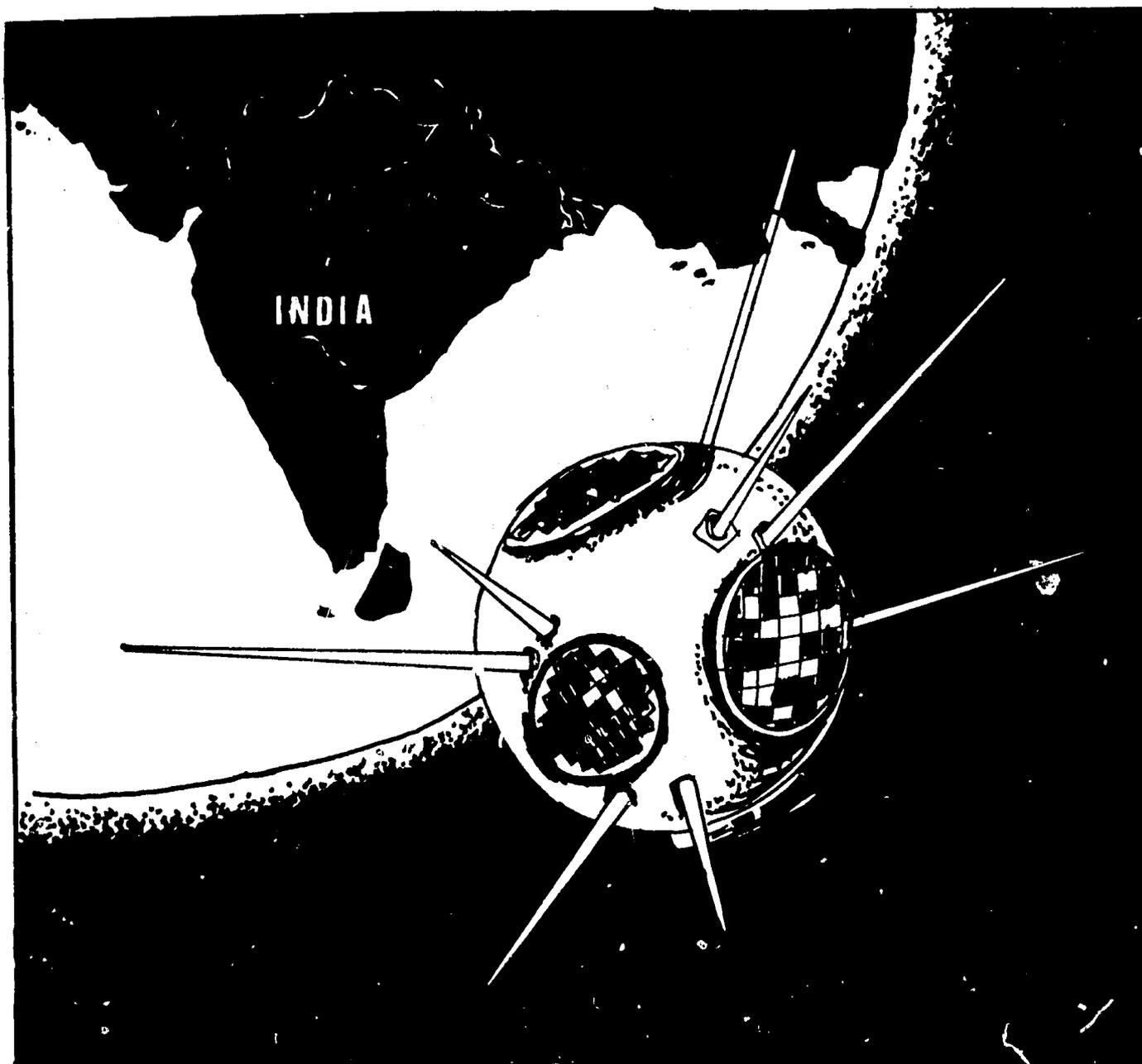
Community receivers will serve about 400 villages each. The villages clusters will be selected to obtain the widest possible range of meaningful information from the experiment.

Each community receiver will be within a radius of 50 miles from the village clusters. The cluster radius was designed to facilitate maintenance of the sets, and was also planned so that the Indian government could continue broadcasting via a small, inexpensive terrestrial system after the experiment is over until its own domestic satellite is ready.

### **Training**

The experiment will involve broadcasting for about four hours every day, a total programming time of approximately 1,460 hours. The Indians plan to finish and pretest about 1,000 hours of programmes before the experiment begins. To prepare personnel for production of these programmes, India established a TV training institute at Poona, and a TV teacher training programme at Delhi, both with aid from the United Nations Development Programme (UNDP).

*Continued Overleaf*



### Evaluation

Constant review, immediate feedback, and long term evaluation will be built into the experiment in order to help determine the effectiveness of television programmes on population control, health and hygiene, illiteracy, and food production. According to the paper presented at the Broadcast Satellite Conference in Nice, France, the experiment will be concerned with immediate feedback and long-term evaluation. Immediate feedback will become available through (1) social science organisations operating in the various cluster areas; (2) pretesting which will be carried out in the eight programme generating centers spread over the country, and (3) tapecasting roughs ahead of programming. The long-term evaluation is to be compiled by a consortium of leading social scientists in India who will apply their skills to problems of feed-forward, research, evaluation, and feedback.

### Costs

Total cost figures are not available for the experiment, but in a report to the United Nations in 1968 the original hardware costs were estimated at approximately seven million U.S. dollars. This cost figure excludes the satellite which is being provided by the U.S. A Stanford University study

estimates that the front end (antenna, converter, preamplifier and IF) minus the TV set itself, in numbers of 500-1,000 would cost \$600 to \$800 if produced in the United States. However, India plans to produce its own.

A realistic picture of costs would also have to include the money that UNDP, the Telecommunications Union (ITU), and others have spent and the cost of programme design, development, testing and presentation. Of course, the value of all of the educational ATS-F experiments extend beyond the dollar investment because the knowledge gained will provide guidelines for policy, design of hardware and software, evaluation of educational merit, and the economics of system development, implementation and operation.

*Reprinted from: Instructional Technology Report, August 1972, a publication of the Information Center on Instructional Technology, Academy for Educational Development, 1424 Sixteenth Street, N.W. Washington DC 20036.*

## DIRECTOR'S CORNER

by LY CHANH DUC



The new year is with us. May our readers share abundantly the blessings of Yuletide and may they enjoy a peaceful and productive 1973. At Innotech we are looking forward to a rewarding year of research and training. We can also look backward to a busy 1972.

Our second interns programme was completed in June with 16 participants from the eight Seameo member countries and the third programme began in September. A three-month training programme for 24 persons was held in April through June. October saw the birth of a new type of three-month programme which concentrated on educational problem-solving and decision-making.

In the meantime, seven national seminars were held in February and March. The following themes were selected: Systems Analysis in Education, Primary School Curriculum, and Alternative Technologies at the Primary Level. A Seminar on Educational Technology was conducted in Singapore in April, with the Academy for Educational Development as co-sponsor. This was followed by a Regional Practicum on Alternatives in Education, in which guest speaker Ivan Illich defended with verve and gusto his vision of a "society without schools." In October, Innotech hosted a Regional Seminar on "Problems of Production

and Promotion of Teaching Materials in Southeast Asia", which was jointly sponsored by Seameo and the German Foundation for Developing Countries (Deutsche Stiftung für Entwicklungsländer).

In research and development, the Center is most appreciative of the professional staff who, with very limited manpower, have done so much in so little time. Now ready for distribution are reports on various field studies and surveys conducted by the Center: a) Selected Educational Projects in Seameo Countries; b) Primary School Readiness Testing: Feasibility Study; c) Critical Classroom Behaviours of Teachers (two volumes).

Two new projects are underway: (a) a self-instructional programme for upgrading English listening comprehension for participants in Innotech training courses, and (b) a "programmed teaching" study to develop means to use non-professionals for supplemental instruction in primary schools.

Plans are being finalized for two large-scale projects to be implemented by the Center at the request of Seameo: a) Development of Instructional Objectives for Primary Education, and b) Development of an Effective and Economical Delivery System for Mass Primary Education.

All told, it has been a busy and fruitful year at Innotech, and the new year promises to be even more productive.

The Newsletter this month features the scheduled February seminar on "Approaches to Effective and Economical Delivery of Mass Primary Education." We hope to make this seminar one of the best that Innotech has held.

Two regional developments are summarized: (1) Projek KHAS in Malaysia, and (2) the Hotel and Catering School in Singapore. On the final page, Dr. Aurelio A. Tiro challenges us to increase our cooperative efforts to reach solutions of educational problems common to our countries.

Once again, a very Happy New Year.

*From Page 1*

expertise and experience with the seminar participants.

The first three days of the Seminar will be devoted to the presentations and discussions of the working papers which we hope will be stimulating to all.

The fourth day will be a departure from the typical seminar format: we wish to reserve this full day for assessing and possibly redetermining, with the help of a Select Committee of seminar participants, the role which Innotech should play in seeking solutions to the

problems of primary education. In other words, we anticipate a full day of candid discussions between the Select Committee and the Innotech Staff, a brainstorming session in which ideas and suggestions will be collected on how Innotech should map out its activities in order to implement the project entrusted to the Center by Seameo.

The Council of the Southeast Asian Ministers of Education has requested Innotech to invest its resources over the next several years in exploring ways to solve the problem of providing effective and economical primary education. The Center is very

pleased, therefore, to be able to host this Seminar which is one of the first steps toward the implementation of the project entrusted to it by Seameo.

Innotech invites persons in SEAMEO countries to send short summaries of new educational developments for inclusion in this Newsletter. From those selected, INNOTECH will take the responsibility for final editing. It is through information exchange such as this that we all may benefit.

# ***Innotech: Regional change agent for educational innovations***

by DR. AURELIO A. TIRO



**A**mong the phenomena that have been observable in Southeast Asian countries after the Second World War are population explosion, greater social demand for education, services and productivity, and a persistent demand for properly oriented human resource development efforts. In the field of education, they surfaced in the form of large classes, limited class session plans, denial of admission to children of school age, inefficient learning, high educational wastage, and increasing percentage of unemployed educated, to mention a few. There has been a growing disappointment with the speed with

which education contributes to socio-economic development. At the same time, it is recognised as a primary means of attaining this end.

Improvements – now and in the future – in the situation portrayed above through conventional educational strategies would be difficult, if not altogether impossible. Continued employment of such strategies could mean further depletion of resources without making a noticeable impact on the increasing number of illiterates, ill-trained school leavers, inefficient producers and workers, as well as the enlarging number of unproductive educated.

Some innovations geared in that direction have been successfully developed in the region. However, at this stage, they have barely scratched the surface, so to speak. In fact, the diffusion of these innovations on a regional scale has yet to be done for the purpose of creating awareness and securing feedback. Innovation consciousness and initiative have yet to be developed.

One key to problems of such a magnitude is through regional cooperation. Seameo member countries saw the need of cooperatively meeting the situation squarely, and the Regional Innotech Center is an embodiment of this spirit. In it is reposed the responsibility of disseminating innovations, developing prototype solutions to problems

## **INNTECH CALENDAR**

22 December 1972 – Certificate Awarding Ceremony for the Three-Month Programme Participants  
22-26 January 1973 – SEAMEC Conference  
19-23 February 1973 – Regional Seminar on Approaches to Effective and Economical Delivery of Mass Primary Education

## **PUBLICATIONS**

The following publications will be available soon:

1. Regional Practicum on Alternatives in Education-Final Report.
2. AED/INNTECH Seminar on Educational Technology-Final Report.
3. Self-help Barrio High Schools: The Story of 250,000 students earning their education, by Dr. Pedro T. Orata.

member countries identify, conducting try-outs and research on regional problems, and training for leadership in disseminating innovations and technology.

As a change agent innotech is still very young. Pitted against its many-faceted functions, its effectiveness will be conditioned greatly by the dedication it gives to the service desired and by the challenge member countries pose as exemplified by their utilization of its products and resources. Innotech was created by the Seameo countries to provide an institutional means for cooperation among Southeast Asian educators. Given continued support, Innotech can assist in meeting these many challenges and in being a meaningful *regional change agent for educational innovations*.

**REGIONAL INNTECH CENTER  
39 NEWTON ROAD  
SINGAPORE 11**

# INNOTECH MOVES TO SAIGON

Innotech is happy to announce that it will soon be moving to Saigon where it belongs. Actually, the Center had been scheduled to move in July 1972, but due to unforeseen circumstances it was allowed to stay one more year in Singapore.

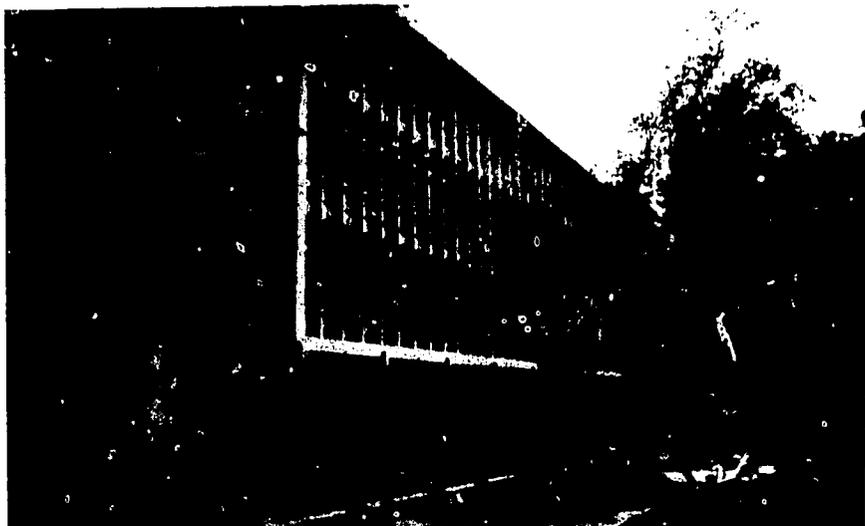
Detailed plans have been made for the transfer to be effected in July this year, including a farewell party in June to take leave of Singapore. The Government of Vietnam has set aside half of a new building for Innotech to occupy as its interim home.

The total floor space reserved for the Center is about 1,500 square meters, and is sufficient to accommodate 50 staff members and 48 programme participants from Seameo member countries, the latter coming three times a year, each time for three months. It should be noted that the staff include 24 senior and junior specialists whose task is both to take care of the participants and to carry out research work, particularly those research projects which Seameo has requested Innotech to implement.

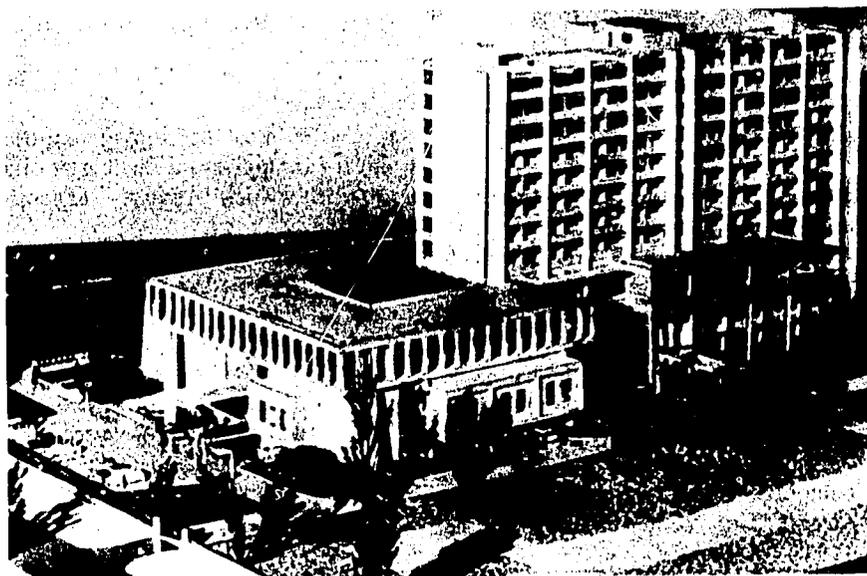
Plans have been drawn for the Center's permanent building, and in a couple of years from now Innotech will look like this. →

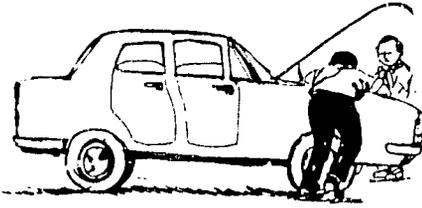
*Continued to Page 3*

*Innotech permanent building.*



*Interim home of Innotech.*





# COMPREHENSIVE SCHOOL PROJECT

## THAILAND

In the past, secondary education in Thailand was designed solely to prepare students for universities. However, a wide variety of children of different economic backgrounds, abilities, aptitudes, interests and needs now attend secondary school. Some of them are preparing for university education, but some want to go on to higher vocational schools and some want to terminate at the end of secondary level. Because the previous curriculum was rigidly prescribed, a lot of students failed the final exam. This caused high drop-out and failure rates. Some of those who graduated could not go on to a university because of limited room. These graduates studied only academic subjects, so they are not prepared for jobs or apprenticeship.

One Buddhist monk said that

secondary education in Thailand sent young, energetic kids to the top of a big deep canyon, over which they had to make a big jump in order to reach the other side which was university education. It was depressing to see these young children try desperately to enter a university. Some of them waited unproductively for 2 or 3 years before they could get in a university. Some never made it and they were ill-prepared for technical or skilled occupations.

Comprehensive education was started to solve these problems. Keeping in mind the negative attitude of people against vocational education and blue-collar workers, the curriculum was prepared in such a way that:

1. after one year of exploration students are allowed to take purely academic subjects; or a combination of academic and vocational subjects; or only vocational subjects if desired. Guidance is set up to guide

students to make realistic choices.

2. More time is allowed in later years (higher level) for electives to serve the individuals' needs, that is to say if a student wants to terminate at the end of secondary level he can take more vocational subjects to be prepared for a certain kind of job or apprenticeship.
3. Everybody is required to take more general education courses.

Offering both academic and vocational subjects in one school solves the problem of very low enrolment in secondary vocational schools. It serves the manpower needs of the country while, at the same time, serves the needs of the individuals. Not all secondary schools in Thailand use comprehensive programmes but many are moving to that direction.

For more information write to Director, Comprehensive School Project, Samsen School, Bangkok 4, Thailand.

## new developments in the region

# SKILL DEVELOPMENT CENTER

## INDONESIA

How can minimum resources be best used to provide quality technical and vocational education? The approach which is being adopted by the Indonesian government is the Skill Development Center. Instead of spending more on several such schools which may be of sub-standard quality and under-utilised, the decision was made to concentrate on one well-equipped center serving a number of schools. This "center concept" can be

applied in most developing countries, and it can apply to a number of other subjects which require expensive facilities.

The Skill Development Center in Malang, Indonesia, is well-equipped with all new equipment and facilities of standard quality at a cost of US\$15 million. It provides for laboratory and workshop subjects for more than 1,000 students in academic secondary schools in the Malang area. Subjects include: chemistry, biology, physics, metal craft, woodworking and

electronics. Other vocational courses also are offered to prepare students for future employment. On the other hand, the proposed curriculum does not close the door for those who wish to continue their study at the university. The programme is flexible and, with 2½ hour periods, students have sufficient time to complete laboratory experiments or workshop projects..

For further information, please contact Dr. Supartinah Pakasi, Ikip Malang, Malang, Indonesia.



## NON-REGIONAL EDUCATIONAL DEVELOPMENTS

— AN INFORMATION EXCHANGE  
SERVICE OF INNOTECH

# NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

Every year billions of dollars are spent on education in the United States — on newer and better school facilities, teachers' salaries, curriculum planning, and the like. As the cost of education continues to rise, educators, as well as the taxpayers who support them, are demanding to know just what the schools are accomplishing. Do American students actually know more because so much money is being spent on their education. What exactly do they know, and what don't they know that they should? The Education Commission of the States (ECS) is finding the answers to these crucial and difficult questions.

This ambitious project, called the National Assessment of Educational Progress (NAEP), is an information-gathering effort designed to find out what young people know and can do in ten subject areas commonly taught in American schools: Citizenship, Science, Writing, Reading, Literature, Mathematics, Social Studies, Music, Art, and Career and Occupational Development. The purpose of the project is to describe for educational administrators and the American public the educational attainments of its young people, and to measure any growth or decline in these educational attainments over a period of time.

According to James Hazlett, Administrative Director of NAEP, "National Assessment represents the first attempt to describe the learning levels of young people on a national basis — the first attempt to get dependable and descriptive information about what young people know and can do and how they feel." As such, National Assessment differs significantly from tests usually given in

American schools. Assessments are not aptitude tests to tell what students are capable of doing; nor are they the familiar standardised achievement tests which measure where one student ranks in relation to other students. National Assessment does not measure individuals. It measures the knowledges, skills, understandings, and attitudes of certain groups, or "categories" of individuals.

National Assessment chooses its respondents from four specific age groups: 9-year-olds, who are near the end of their early primary education; 13-year-olds, who are near the end of their elementary education; 17-year-olds, who will soon be finishing high school; and young adults, aged 26 to 35, who are ordinarily through with their formal education. The results show what percentage of each age group responded acceptably to a set of tests or "exercises" in a particular subject area. In addition to the national figures, the reports are analysed for four regions of the country, by size and type of community represented by the respondents, by race, sex, and parents' educational attainment. These breakdowns offer additional information upon which judgments and interpretations may be based.

### The Process

*There are four major steps in the National Assessment process:*

*First, establishing objectives.* This process is to determine what people think young people should know about a subject at certain age levels. For example, the Mathematics objectives indicate that 9-year-olds should be able to read and write fractions, and 13-year-olds should have

a knowledge of simple Algebra; 17-year-olds should be able to perform some simple geometric problems. Objectives have been developed in each of the ten subject areas by experts in the field, teachers, and laymen. This is the first time that such a comprehensive procedure has been used to formulate objectives at the national level about the knowledge that young people are expected to attain.

*The second step is to develop exercises* to measure how well young people fulfill these objectives. These exercises are unique in their scope and originality. For example, an art exercise might ask a student to do some simple art task. A writing exercise might ask junior high school students to write an essay about a person they admire. A citizenship exercise might ask 17-year-olds to form a group to discuss a controversial issue. Each question or task is carefully designed to measure how well young people can perform exercises directly related to the objectives.

*The third step is to select an accurate random sample* of young people at the four age levels. The exercises are then administered to these groups in school and out of school. Approximately 100,000 people participate in each assessment. A scientific sampling procedure assures accuracy and reliability of the results.

*The fourth step is to collect the data, analyse them, and publish the findings.* To date, 12 reports, which give the results for Science, Citizenship, Writing, and Reading have been published.

NAEP publishes about half of its exercises with the responses made by

groups of individuals at the four age levels. Such a method of reporting allows for the detection of areas of strength and weakness in the knowledge of American youth. Since results are reported by exercise, and percentages are given for incorrect as well as correct responses, the NAEP study reveals the misinformation of young people in addition to the factual knowledge they exhibit, Hazlett said.

#### The Findings

These are some of the highlights of the first assessment reports:

In all four subject areas assessed so far, there are striking differences in achievement by various areas of the country. In almost every instance NAEP documents that the achievement of the Southeast is lower than the rest of the nation. There is clear evidence that youngsters in the big cities and rural areas lag behind those of the affluent suburbs and smaller cities.

In the areas of Science and Citizenship, males performed better than females. But the girls surpassed the boys in Writing and in most fields of Reading.

Of particular significance are the findings related to the educational level of the parents. In every instance as the level of parental education rose from less than high school, to high school, to postsecondary education, the achievements of the children increased. The implications of this fact should be extremely significant in America's efforts to break the cycle of poverty, ignorance, and other social deficits.

The latest reports on Reading show that most young people can read sufficiently well to perform the normal and essential tasks of everyday living. The average achievements were close to the 75 to 80 percent correct level, considerably better than was expected. Young people could read at this level newspapers, directions, advertisements, application forms, T.V. schedules and so forth, though they were not skilled in interpreting a Shakespeare sonnet. So in spite of a popular preoccupation to condemn the educational establishment - charging that they are not teaching youngsters to read, the data show how the ones who cannot read are usually concentrated in the inner city, or rural area, with a variety of identifiable characteristics and learning barriers.

One of the "plus" factors of the



*A field administrator records a girl's response to a rhythm exercise in the music assessment.*

early results, Hazlett said, is the fact that "they establish benchmarks against which NAEP will be able to measure educational change and progress in the future. For the first time we have data that will give us some factual basis to compare what youngsters in the city know with the knowledge and skills of young people in rural areas, or Blacks and Whites, or girls or boys and so on."

The National Assessment programme "is giving the nation a new and vital resource to be used in evaluating the output of our educational system," Hazlett continued. "The first results, of course, set the marks against which the hoped-for improvements will be measured as subsequent assessments are made. In a sense, much of the value of the assessments may not even be apparent for five or 10 years."

Each year, NAEP assesses two subject areas. The second assessment of a subject area, which provides the first comparative results, normally takes place five years after the initial assessment.

Since it is neither a national testing programme nor an attempt to set up a national curriculum, NAEP limits itself to the "information-gathering role," Hazlett said. No comparisons are made of individual states or school districts, and NAEP and ECS do not make judgments about the implications of the results. Rather, the project makes its data available to school administrators, curriculum planners, and other educational organizations for study

and implementation. It is up to these groups to determine which things they believe are important, and which items should be strengthened at the local school level.

In addition to the National Assessment project in the United States, an International Assessment of Educational Progress (IAEP) is currently being conducted by the United Nations Educational, Scientific and Cultural Organization (UNESCO). IAEP recently conducted a reading assessment in 15 countries which will enable educators to make comparisons across national lines, and to evaluate achievement differences in terms of the characteristics of the countries involved.

The National Assessment of Educational Progress is not a government project though it is funded by the U.S. Office of Education. The idea of a national assessment was considered as early as 1963 and the effort, already underway, became a project of the Education Commission of the States in 1969. The Education Commission is an independent, voluntary, non-profit group made of state governors, legislators, and state school officials whose goal is to improve the effectiveness of American education. In exercising general control of National Assessment, the Education Commission of the States assures that the project is legally responsible to the American public.

For more information write to: NAEP Lincoln Tower, 1860 Lincoln, Denver, Colorado 80203, USA.

## DIRECTOR'S CORNER

by LY CHANH DUC



**A**t the very beginning of Innotech, when the concept of a Regional Center for educational innovation and technology was being discussed by educational authorities of the region, a well-known educator made a long speech in support of the Center in which he said:

"... For another thing, technology is innovative. The Innotech Center you will soon establish is certainly innovative. We'd all like to be thought of as innovators but we talk a better game than we play. So, let's talk about why we are all charter members of this club.

"You may remember what the British author, C.P. Snow said in his book, *'Miasma, Darkness and Torpidity'*. 'In a society like ours, academic patterns change more slowly than any others. In my lifetime, in England, they have crystallised rather than loosened. I used to think that it would be about as hard to change, say, the Oxford and Cambridge Scholarship examination as to conduct a major revolution. I now believe that I was over-optimistic'.

"And then if we did a little digging we'd come up with this gem. 'It is true, that what is settled by custom, though it be not good, yet at least it is fit. And those things which have long gone together, are as it were confederate within themselves; whereas new things piece not so well; but though they help by their utility, yet they trouble by their inconformity. Besides, they are like strangers, more admired and less favoured.'"

"If the syntax was a bit difficult you might have guessed that it was written in a quieter time when words had a certain savour and authors were a little less free with their use of them than we are today. It was written in 1597 by Francis Bacon and is taken from an essay entitled *'On Innovations'*.

"So innovation has long been recognized as a difficult area in which to work. Some people not only turn the other cheek - they run like mad when anything new is suggested."

The speaker was Mr. James S. Miles, one of the pioneers of Innotech. What he was trying to get at is that, despite all the scepticism, irritation, resentment, or fear related to innovation, there is but one way for us educators to go, and that is the innovative way.

As a matter of fact, Innotech is built on the firm belief that the challenge of education in our rapidly changing societies must be met by innovative approaches to learning and teaching. And it is obvious that innovation cannot be realised as long as we are afraid to innovate. "Men cannot discover new oceans unless he has the courage to lose sight of the shore", said Andre Gide.

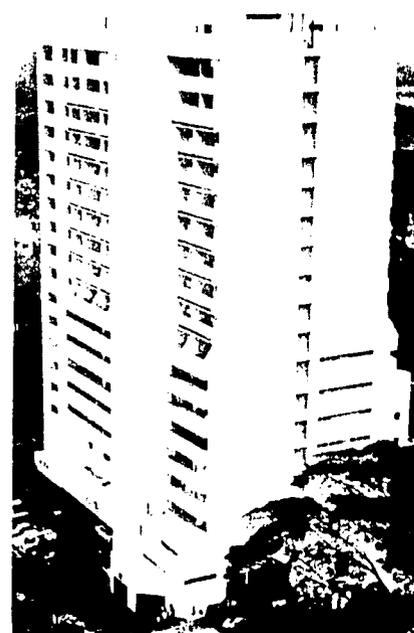
It is my hope that the above quotations are enough food for thought for the month.

From Page 1

This building will be imposing enough, but will have 4 floors less than that of Innotech's sister institution, the Regional English Language Center (RELC), in Singapore.

Innotech is pleased to have shared the pride with RELC when this beautiful 18-storey building was dedicated by Mr. Lee Kuan Yew, the Prime Minister of the Republic of Singapore, on September 18, 1972.

The Center is very grateful to the Government and people of Singapore for their hospitality and kindness. We feel that the past three years of operation in Singapore have contributed a great deal toward better understanding and friendly relationships between the two Republics of Singapore and Vietnam. It grieves us to depart, but we will comfort ourselves by remembering that Innotech is somewhat more fortunate than the other SEAMEO Regional Centers in having two homes instead of one.



RELC permanent building.

Innotech invites persons in SEAMEO countries to send short summaries of new educational developments for inclusion in this Newsletter. From those selected, INNOTECH will take the responsibility for final editing. It is through information exchange such as this that we all may benefit.



# THE PROBLEM OF STATING PROBLEMS: A SELF-INSTRUCTIONAL MATHEMATICS PROGRAMME

by MICHAEL NATHENSON

## Frame 1: Preview

This is a "Mathematics Exercise," one type of programmed instruction used at Innotech to permit students to learn concepts at their own rate without the use of a lecturer.

The purpose of this particular self-instructional programme is to teach readers of the Innotech Newsletter how to formulate educational problems in an effective manner.

This programme will be beneficial to any educator who wants to improve his problem solving skills.

For maximal learning to occur, proceed through Frames 2, 3, 4 and 5 in the following manner:

- A. Answer each question in *writing*
- B. Cover the correct answers while responding
- C. Upon completion of each frame, compare your written responses to our suggested answers.

## Frame 2: Pre-Test

Perhaps you already know how to state educational problems in an effective way. If so, there is no need for you to take this programme.

**REWRITE THOSE PROBLEM STATEMENTS WHICH IMPLY POTENTIAL SOLUTIONS TO THE REAL EDUCATIONAL PROBLEM:**

1. "More primary school children must learn to read"
2. "It is important to build more advanced science laboratories in the secondary schools"
3. "We need more buses to transport rural children to schools; otherwise, they will not be educated"

### FEEDBACK

1. Adequate as written.
2. "We need to raise the level of achievement among secondary science students" (or equivalent response).
3. "More learning opportunities should be provided for those rural children who are not in school" (or equivalent response).

## Frame 3: Initial Teaching

For purposes of this programme, we will adopt the criteria that a good problem statement is one that:

- *focuses upon the learner, not the instructor (teacher) or a particular technique of instruction*
- *does not imply potential solutions to the problem*

The problem statement: "There are not enough mathematics textbooks in rural schools," stresses a technique of instruction (textbooks) and, in so doing, implies a potential solution to the problem (that children need textbooks in order to learn mathematics). Such an implication limits other potential solutions to the real problem of children learning mathematics.

The problem statement: "Many children are not able to read and understand local newspapers when they leave primary schools," focuses upon the learner (children) and does not imply a solution to the problem. It would permit an innovator to generate any number of alternative solutions to solve the problem without limitations or restrictions.

**MATCH THE FOLLOWING PROBLEM STATEMENTS WITH THE CRITERIA WHICH APPLY:**

### Problem Statements

1. "We need to develop a closed-circuit television system to teach more urban children to read"
2. "More than three-fourths of the children in rural villages cannot count to ten"
3. "More qualified teachers must be hired to cope with increasing enrollments"

### Criteria

- a. focuses upon the learner and does not imply a potential solution to the problem
- b. focuses upon the instructor and implies a potential solution to the problem
- c. focuses upon a technique of instruction and implies a potential solution to the problem

### FEEDBACK

1. (c)
2. (a)
3. (b)

## Frame 4: Intermediate Teaching

This problem statement:

"We do not have enough language laboratories in our primary schools," focuses upon a technique of instruction (language laboratories) and implies that children need language laboratories in order to learn language skills. It needs to be rewritten so that it focuses upon the learner and does not imply potential solutions to the real problem. Rewriting: "More children need to learn language skills in the primary schools"

This problem statement: "There is a critical shortage of reading specialist teachers in primary schools," focuses upon the instructor (teachers) and implies that the employment of more reading specialists will result in more children learning how to read. Rewriting: "More children must learn to read in the primary schools".

**REWRITE THE FOLLOWING PROBLEM STATEMENT SO THAT IT FOCUSES UPON THE LEARNER AND DOES NOT IMPLY A SOLUTION TO THE REAL PROBLEM:**

"Radio broadcasting should be used to help rural children gain a sense of national pride."

### FEEDBACK

"Rural children need to develop a sense of national pride" (or equivalent response which omits radio broadcasting as a solution to the problem).

## Frame 5: Criterion Post-Test

Rewrite those statements which imply potential solutions to the real educational problem:

1. "Too many children drop out of school before the end of their primary education"
2. "It is necessary to revise the primary school curriculum in order to make it more relevant to the needs of an agricultural society."
3. "We should retrain all of the social studies teachers in Southeast Asia in mathematics programming techniques"

Send your completed Criterion Post-Test and any comments you have about this programme to: Innotech, 39, Newton Road, Singapore 11 and you will receive a written critique of your performance.



# INNOTECH NEWSLETTER



Vol. 1, No. 6 SEAMEO REGIONAL CENTER FOR EDUCATIONAL INNOVATION AND TECHNOLOGY March 1973

## Innotech studies educational aims in Seameo countries

**T**HE educational product is basically an embodiment of societal thinking as regards the role that its members are to play in its development. For, society fashions the objectives of its educational system and, subsequently, the learning experiences that schools provide according to society's characteristics, needs, and aspirations. Educational

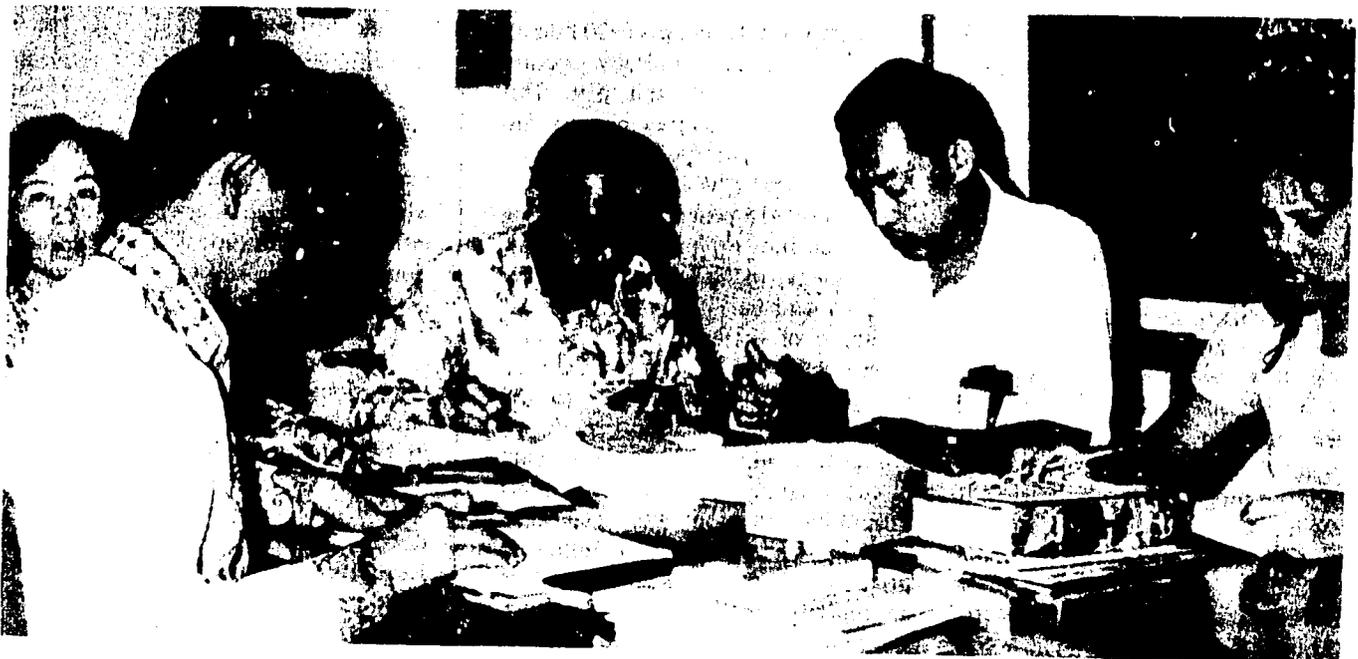
objectives focus on the learner — the emerging man — and, as a sequel, on the emerging society.

The place of objective in education is as well-established as that of the rudder in the boat. At the level of society, educational objectives, in reflecting its distinguishing characteristics and educational needs are a way of keeping the school close

to the people. At the level of the school and the classroom, they provide an orientation to the main emphasis in the educational programmes. Decision-making concerning the scope, content and emphasis of the curriculum has to lean heavily on them.

While the foregoing values are recognised, interpretations differ as

*Continued to Page 3*



From left to right: Mr. Sudomo (Indonesia), Miss Tran Thi Bich San (Vietnam), Dr. Aurelio A. Tiro — project leader (Philippines), Mr. Prachack Deepravat (Thailand), Miss Luningning F. Mangalindan (Philippines).

# THE BPS REGIONAL IN-SERVICE TRAINING PROGRAMME

## PHILIPPINES

**T**O upgrade teaching and supervisory competencies for the improvement of the quality of instruction, and to help improve community living, the Bureau of Public Schools (BPS) has set up the Regional In-Service Training Programme. It is an on-going sub-elementary education project which includes the development of 109 pilot schools with regional centres in 21 strategic places in the Philippines, the construction of regional dormitories and the holding of a yearly series

of regional work conferences

Participants and staff in this programme are teachers, principals, district supervisors and division supervisors.

The project activities include planning and preparation of the yearly in-service training programme by the BPS Planning Committee, regional Advisory Board Meetings, Regional Work-Conferences, implementation of regional work-conferences on the division, district, and school levels.

Feedback is obtained through



a) observation of classes following a schedule of supervisory visits,

b) tri-monthly reports submitted to the BPS Director; c) Annual reports of the Division Superintendents of Schools, and d) Evaluation on the impact of the four-year in-service training programme on teacher competencies.

For more information write to: Mrs. Catalina V. Ty, Elementary Education Division, Bureau of Public Schools, Manila, Philippines.

## new developments in the region

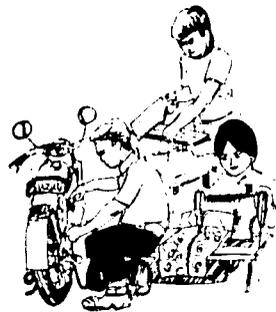
### MOBILE TRADE TRAINING SCHOOLS

#### THAILAND

**A**DULTS and out-of-school youth living in Thailand's rural areas with only 4 years of primary education now have an opportunity to learn basic trade skills which was not available to them before. Mobile Trade Training Schools (MTTS) have been established in 54 provinces to provide training in the skills necessary for jobs in industry and agriculture.

The schools are mobile in the sense that teachers and equipment can be moved to new districts of a given province when enrolment at the initial location has dropped.

The programmes are designed to provide training in the basic trade skills with minimum expense and time. They offer the following courses: metal works, automechanics, electricity, radio and TV, welding wood-works, cooking, food preparation, sewing, bookkeeping. Courses can be



completed in five months (300 hours). MTTS programmes typically operate 3 three-hour shifts each day. This multiple use of facilities permits the programme countrywide to train 43,000 people a year.

The MTTS programme is growing rapidly creating a number of problems: recruitment of teachers and other staff members for the schools, exchange of teachers and other staff members among the various schools; transportation of materials to the schools; communication, etc. To minimise or eliminate these problems, a coordinating unit, the Vocational Promotion Division was established to help the schools set up follow-up programmes, supervise and introduce appropriate methods of teaching, introduce new materials to improve the training, and to see that supplies, personnel, and facilities are being

utilised to capacity.

For more information about this programme please write: Director, The Vocational Promotion Division, Department of Vocational Education, Ministry of Education, Bangkok, Thailand.

#### CLASSROOM TELEVISION:

Instrument for Educational Change

**I**NNOTECH now has a 16 mm colour film on classroom television (in English and French) which is available on loan to interested educational institutions in the SEAMEO member countries. The film was produced by the International Cinemedia Center for the Academy for Educational Development (AED) and deals with Classroom ETV in two countries, Niger and El Salvador.

INNOTECH has agreed to distribute this film for AED. Requests for borrowing the film should be addressed to: Regional INNOTECH Center, 39 Newton Road, Singapore 11.

# ***THE OPEN UNIVERSITY OF GREAT BRITAIN***

## **NON-REGIONAL EDUCATIONAL DEVELOPMENTS**

— AN INFORMATION EXCHANGE  
SERVICE OF INNOTECH

**T**HE Open University is a unique institution of higher education. It employs the most advanced and sophisticated multi-media instructional system in the world to teach large numbers of students at a distance.

You can enroll for the Open University's courses only if you live in the United Kingdom; in 1973 about 45,000 students will be studying. Most will take undergraduate courses, some will do special 'post-experience' courses not for credit towards a degree.

The students are generally over 21 and work full-time. They do not necessarily have good secondary school qualifications: the University is Open because no high school diploma is required for entry. They are drawn from a very wide range of occupations, but all of them wish to take university courses because they did not have the opportunities before or could not take full advantage of them.

Each Open University student receives regularly through the mail correspondence packages containing the 'units' (basic reading materials) for about four weeks' work on one course. A complete 'credit' is made up of about 34 weeks' work, and six credits make up a B.A. degree. Students must expect to spend about 12 hours a week studying on their own, and most take only one course a year.

The units are certainly not merely sets of duplicated notes; they are carefully planned and finely printed booklets. A typical unit contains a considerable amount of exposition, illustrated by diagrams or pictures where necessary. To assist the student in assimilating the content, there are self-assessment exercises in which the student works out the answers to questions and then checks whether he is right by turning to a

page on which the answers are shown. There are also unit tests or assignments, which are completed by the students and then sent to the Open University. Some of the assignments go to be machine-marked by a document reader linked to a computer. Others go to tutors to be marked and commented upon before they are returned to the students. Some units include special materials such as glossaries, or direct students to extra pages containing remedial or enrichment material. Also contained in the packages will be notes about the television and radio programmes.

Almost all the students have television sets and radios capable of receiving the B.B.C.'s broadcasts of Open University programmes. Those who cannot see or hear the broadcasts because they live outside the transmission areas, or for other reasons, can visit one of the 280 study centres that are open each night of the week Monday to Friday and see the same programmes there on film or tape.

For each unit there is normally one television programme and one radio programme. The programmes are closely integrated with the correspondence materials in some subject areas. For example, in Science the television programmes are vital for the student who wants to understand the course, and students who do not see them may have considerable difficulty in reaching the required level for a credit in science.

The integration of the science correspondence materials with the television programmes is extremely close. In a typical programme, students are being asked to turn to a particular page in the course unit, and then to enter in their course materials instrument readings and answers of various kinds. The course materials, in other words, deliberately have gaps

to be filled in from the telecasts.

Criteria were established for selecting items for television in the science course. The first is that items requiring demonstrations of visual movement should go on television. The second is that the laboratory experience that conventional students have should be brought to the Open University student wherever possible on television. The third is that television should take the student into situations that he would not normally be able to go into, but which illustrate vital points in the course. An example of this last criterion in action is the filming of operations inside a nuclear accelerator. In mathematics, the telecasts include computer simulations of mathematical functions, using a technique only recently developed.

The uses of the radio broadcasts vary from course to course, as with the telecasts, but a very important role played by radio is the remedial one. Television material needs extensive production facilities and is prepared far in advance of the date of broadcast. Radio is used at much shorter notice to provide remedial advice. Radio is also the natural medium for the music which will be included in the Humanities foundation course.

To put the broadcasts in perspective, however, we should note that in terms of the average student's time per week television occupies a small portion only (five per cent). Out of 12 hours learning a week, the average student watches television for only about 25 minutes. Radio occupies a similar portion of his time. Most of the remaining 11 hours or so go to reading and writing, including the answering of tests. But the influence

*Continued Overleaf*

of television and radio should not be under-estimated, despite this small percentage. Television probably provides the most powerful stimuli of all the learning resources.

The study centres are situated in existing educational buildings, such as schools and colleges. Attendance at them for counselling or tuition is completely voluntary - only those students who want help come to the centres - and about one-third do not come at all. The centres are places where students may meet counsellors, whose task is to deal with any general problems the students have in learning from the Open University's instructional system. For instance, if a student falls far behind, the counsellor is there to advise him on whether to omit work in order to catch up. In the study centres there are also television and VHS-radio sets. In many study centres there are additional facilities, such as audio and video playback machines, and computer terminals for mathematics students.

The study centres are also places where students may meet their course tutors. These tutors are responsible for grading and commenting upon the written assignments, and they conduct group tutorials once or twice a month (less frequently for some courses) at the centres.

Most students have to attend summer schools for one or two weeks each year. In these schools they not only receive additional face-to-face assistance but also engage in activities important for university level courses and impossible to arrange in the study centres. Laboratory work features prominently in the science summer schools, for example. The summer schools are held in conventional universities and come in the middle of the Open University academic year, which lasts ten months, beginning in January.

Students taking courses in science and technology receive large kits through the mail. They use the contents of these kits to carry out series of experiments in their own homes. The experiments are closely linked to the other course material, and, together with what is provided via television and in summer schools, are intended to supply the essential practical work.

Students taking some arts courses receive phonograph records, colour slides and art reproductions

suitable to their needs.

All students pay fees for tuition but these are quite low. The University is subsidised by the British Government and fees cover only about 15 per cent of its running costs, which in 1973 will be about \$25million. The BBC produces the programmes for the Open University and broadcasts them under contract.

On the institutional research side we have a responsibility to evaluate the instruction by measuring its impact on the students. This mammoth task has been begun as the University's courses have been launched. A plan for evaluative research has been drawn up, and funds have been secured for portions of the plan.

The first part of the plan calls for a range of studies of the mass of data accumulating every week from the thousands of students of the University. All courses at the University include a strong continuous assessment element, and scores are derived for both tutor- and computer-marked assignments. In the first year of operations, for example, the computer placed on file over 100,000 tutor-marked 'grades' and rather more computer-marked ones. The figures for actual question scores will be far higher, of course, and item analyses within questions will involve millions of characters. To establish a computer system capable of providing all the analyses that might be useful to the University would be very expensive. The development time would also be considerable. A list of the most valuable analyses has been drawn up; meantime the Data Processing Division has been using the University's computer to provide basic print-outs for use by the course teams.

In addition to the assignment scores being analysed, the opinions of students about the course units, including the broadcasts, are also being collected and analysed.

Another part of the plan involves studies of the educational and occupational background of students in the Open University. A grant has been made for the collection of data from the University's first cohort of students. An initial questionnaire was sent in 1971 to all students to cover in some detail their educational and occupational backgrounds, their work and leisure patterns, and their future plans.

Data from a representative sample drawn from this first cohort were analysed to provide a basis for some of the University's major decisions about future courses. The remainder of the data have been banked to form the basis of a longitudinal study of this group of students.

Other evaluative projects now being undertaken involve the University's extensive tuition and counselling system, the special needs of science courses, the use of the broadcast media, and textual presentation techniques in the printed units.

Most of the evaluative work is the responsibility of the staff of the Institute of Educational Technology which is a research and design group built into the University's structure. The staff includes academics from a wide range of disciplines - psychologists, sociologists, statisticians, mathematicians, scientists, an historian, an economist, and so on. All are deeply interested in finding ways of improving the University's learning system.

Prepared by Professor David G. Hawkrige, Director of the Institute of Educational Technology, for the Innotech Newsletter, journal of the South-East Asia Ministers of Education Regional Centre for Educational Innovation and Technology, Singapore.

Further details about the Open University can be obtained from the following:

**General information:** The Director of Information Services

**Academic matters:** The Pro Vice-Chancellor (Academic Policy)

**Administrative matters:** The Secretary

**Instructional systems:** The Director, Institute of Educational Technology

**Marketing and sales:** The Director of Marketing

All the above are at the Open University, Walton Hall, Bletchley, Bucks, England.

For inquiries about Broadcasting please contact the Chief Assistant, The Open University, British Broadcasting Corporation, Broadcasting House, London W1A 1AA.

## DIRECTOR'S CORNER

by LY CHANH DUC



**T**HE eighth Conference of the Council of the Southeast Asian Ministers of Education (SEAMEC) was held in the beautiful city of Phnom Penh, the capital of the Khmer Republic, located on the majestic Mekong river. The date was 22-26 January 1973, which happened to fall in the historical week in which the Vietnam ceasefire agreement was initialled and signed in Paris.

As the prospects of peace raised new hopes for the region, a happy mood pervaded the conference. To mark this historical event, the Council passed a special resolution, which reads: "The Council, welcoming the announcement of the initialling of the ceasefire agreement in Vietnam, expresses the hope that the cessation of hostilities will open the way to more active and effective reconstruction and development efforts in the field of education in Vietnam, the Khmer Republic and Laos; resolves that SEAMEO call

on other countries and international agencies to assist the Organization in helping Vietnam, the Khmer Republic and Laos in their reconstruction and development efforts in the field of education."

At the same time, offers of assistance to the suffering countries of Indo-China emanated from various parts of the world. Pope Paul VI and United Nations Secretary General Kurt Waldheim, in particular, declared themselves ready to do everything possible to help; also the European Economic Community and the International Red Cross resolved to provide various kinds of assistance. All in all, it was an exciting week in which sympathy and encouragement ran high.

Innotech too, received its part of sympathy and encouragement when it reported to the Council that plans had been made for the Center to be transferred to Saigon by July this year. To help the Center in its personnel recruitment efforts, the Council passed a resolution to the effect "that SEAMEO Ministries of Education increase their efforts to identify and make available to the SEAMEO Centres qualified specialists for professional staff positions, and will make arrangements for release of individuals selected by the Centre concerned."

During the coming months of March and April when the Center Director will tour the member countries in his search for professional staff, it is hoped that the assistance from the Ministries, as stated in the above resolutions, will materialise.

*From Page 1*

to the purpose educational objectives should really serve and the manner in which they are to be stated and the way they are to be attained. Contributing to the enrichment of the literature on the subject during the last decade are two studies on the educational objectives of 14 Asian countries. The first, National Statements on Educational Goals, Aims and Objectives in Asian Countries, was conducted by the Japan National Commission for UNESCO in 1969 involving six out of the eight SEAMEO member countries, the desired national statements were obtained through a questionnaire which competent authorities of member states accomplished. The country reports were to constitute the resource material for the Meeting of Experts (Regional) on Educational Goals, Aims and Objectives held in Tokyo, Japan, in the same year. No analysis of the country reports was made. The second, Comparative Study of Curriculum

Development at the Stage of Elementary Education in Asian Countries, which was conducted by the National Institute of Educational Research (Japan) in 1970 studied educational objectives as a dimension of the curriculum. A comparative analysis was made of the overall school education, primary, and secondary education objectives from the standpoint of common trends, special features, personnel involved in and year of formulation, as well as outstanding problems and issues.

More investigations on the subject, particularly in the Southeast Asian Region will certainly contribute to a better understanding of educational objectives in the area at the same time provide, through the analysis, insights which may suggest guidelines in improving them. It is in this spirit that INNOTECH has been entrusted by SEAMEO to make a "Comparative Study of Stated Objectives of Primary Education in

SEAMEO Countries." The study is under the direction of Dr. Aurelio Tiro (Philippines) who is being ably assisted by Tran Thi Bich San (Vietnam), Luningning F. Mangalindan (Philippines), Prachak Deepravat (Thailand) and M. Sudomo (Indonesia), all of whom are INNOTECH Interns who have completed formal course work and are now participating full time as staff members.

The study is endeavouring to compare priorities and emphasis of national goals, overall educational objectives, objectives of primary education as well as instructional objectives from the standpoint of phases of development stressed, common and distinguishing features, and methods of deriving them. It also intends to analyse the distribution of the instructional objectives among the cognitive, affective and psychomotor domains. The results of this study will be available to member countries by July of this year.

# THE INTERNS SPEAK OUT:



**NUANCHAN  
POTAR —  
THAILAND**

**A**S a supervisor of the Comprehensive School Project, I had the opportunity to visit schools in different parts of Thailand to supervise teachers of various backgrounds. I also had the opportunity to organise in-service training for teachers. Having seen so much of the schools, met so many kinds of teachers, administrators, parents and students and having worked and lived with them, I have always felt that I could never do what needed to be done.

After three months of intensive training at INNOTECH, I am confident that I will now be able to do much more back home.

I don't think that it is too ambitious and too soon to say that, equipped with what I have learned at INNOTECH, and with support from my home department, there should be an increased chance to improve the learning of Thai children. I am particularly interested in the possibility of using different technologies and approaches to solve the problem of early school dropouts, and I am convinced that increasing education opportunities for children does not necessarily mean that we must build more schools — other alternatives may be found.



**THAI  
QUANG HOAN—  
VIETNAM**

**T**HE purpose of my enrollment in the INNOTECH programme has been to extend my knowledge and experience in educational planning. After nearly 10 years of teaching pedagogy and community education and of taking care of students' learning in a teachers' training school, systems approach was still new to me in its application to my job until I came to INNOTECH.

After the first three months of training I have come to understand that "Systems approach is a systematic process for developing a solution, a process which is structured to minimise prejudicial preconceived notions and maximise the objectivity required to arrive at a scientifically correct answer."

I would like to add here that under the guidance of my advisor I will have the opportunity to learn—by-doing by—using the systems approach in carrying out INNOTECH's research projects focusing on current educational problems.

So far my state of affairs is gradually changing for the better as the training programme becomes more helpful for me. I hope I can apply what I have learned these nine months. It would be worth the sacrifice of my daily siestas.



**LUNINGNING F.  
MANGALINDAN—  
PHILIPPINES**

**B**EING a teacher of exceptionally bright children requires me to demonstrate a lot of initiative, resourcefulness and mental alertness. To be able to understand these children, satisfy their ever-increasing appetite for learning, discover and nurture their varied talents poses a great challenge to me. I found this job a physically and mentally worthwhile experience but still, I felt that I needed to learn more and do more as a teacher.

This INNOTECH training serves as a practical application of my knowledge of creativity, particularly of innovative creativity.

Although it is often said and believed that the educational problems in Southeast Asia are insoluble it only appears to be so because we consider only those conventional solutions which most often don't work. The Center believes that there are other alternatives that we can consider, and these are exactly what we must try to generate and work out.

To be able to play a part in solving realistically some of the most pressing needs and problems of education today helps to fulfill myself as an educator.



**SUDOMO—INDONESIA**

**B**EFORE I joined the INNOTECH programme, I was a lecturer at the Faculty of Pedagogy, Institute of Teacher's Training and Educational Science, Malang, Indonesia. I used to teach Social Education, or Non-Formal Education as it is sometimes called.

The Southeast Asian countries are facing serious problems both in formal as well as non-formal education. The training at INNOTECH has sharpened my awareness of these problems. By using systems approach, I now have the opportunity to find solutions in a more organised way.

Large-group discussions, small-group discussions, self-

study exercises, tape and slide-tape presentations are methods of training used at INNOTECH. There is also the feedback applications training exercise (FATE). The major issue of this exercise is whether on his return home the trainee will be able to utilize the training he has had at the Center to solve educational problems in his country.



# INNOTECH NEWSLETTER



Vol. 1, No.7 SEAMEO REGIONAL CENTER FOR EDUCATIONAL INNOVATION AND TECHNOLOGY April 1973

## Effective teaching by 'poorly qualified teachers'

**A**T the INNOTECH Regional Seminar on "Approaches to Effective and Economical Delivery of Mass Primary Education", held February 19-23, 1973, educators from the eight Seameo countries and three outside the region described a variety of plans, accomplished or proposed, for reducing or limiting the mounting costs of primary education in the region while maintaining or increasing its effectiveness. The range of proposals included more efficient designs of physical facilities, higher pupil-teacher ratios, the use of split shifts, better use of teachers' time, the use of resources (human and otherwise), from the community, non-formal education, educational television and many others. Perhaps the most frequent emphasis was given to increasing the efficiency of the teacher or the teaching process it was stressed that teachers' salaries represent 70, 80, as high as 95 percent of educational budgets and that the proportion is greater at the primary than at other levels.

INNOTECH has long been concerned with developing solutions to regional educational problems within the limits of available resources, and with optimizing the use of local

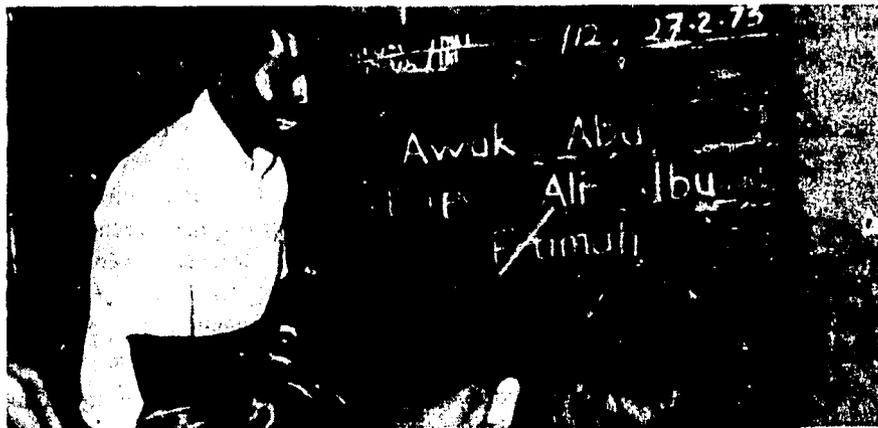
human resources for achieving educational objectives. Two economists (Harbison and Myers, in *Education, Manpower and Economic Growth*) have written: "The basic problem.. is to find new technologies of primary education which can be utilised effectively by low-paid, poorly educated and unqualified teachers." The innovative development and use of technologies in education is, of course, not new to INNOTECH -- it is represented even in its name.

One such technology with promise as a key component for the solution of this problem is programmed teaching. This is a form of programmed instruction which pro-

grammes teachers for class-instruction, rather than pupils for self-instruction. Experimental studies elsewhere have shown that when trained and guided in the details of teaching by suitable programmes developed by experts, non-professionals from the community (including older pupils) can teach some subjects as well as professional teachers using conventional methods; in some cases they have taught from 2 to 15 times as much material in the same length of time. In principle the technique of programmed teaching can be used for the training and guidance of sub-professional teachers who work alone or under the supervision of professional teachers and those who work in a conventional classroom setting as well as those who function as monitors for the various technologies. As an effective practice-oriented training procedure, programmed teaching can also be used to increase the effectiveness of professional teachers.

In an experiment which began in January, 1973, INNOTECH is current-

*Continued to Page 2*



*Programmed teaching in action*

## new developments in the region

# THE FA NGUM COMPREHENSIVE HIGH SCHOOL



### LAOS

**T**HE Fa Ngum Comprehensive High Schools of Laos are designed to implement the Lao National Education Reform Act of 1962. The Act provides for instruction in the nation's schools in the national Lao language; emphasis on the practical rather than the theoretical; use of modern methods of teaching including audio-visual aids; education of the whole man: intellectual, health, social and character; active participation by students in learning activities and school life; and education in the Buddhist tradition.

The Ministry of Education has projected six Fa Ngum schools and has provided the school sites, the administrative staff, the faculty and operational costs.

The first year of study

in the Fa Ngum Schools is a year of orientation to multiple fields of study and work. All students take the same courses in mathematics, science, social studies, agriculture, commerce, home economics, industrial arts, and the foreign languages (English and French). As part of the vocational guidance programme, students make field trips. They interview workers, listen to lectures, view films and filmstrips on vocational choice techniques, talk with teachers and principals and discuss vocational choices with parents who were given the curricula through printed literature and lectures by the principals and department heads. At the end of the first year, students choose one of the following fields as their major for the remaining six years: academic,

agriculture, commerce, home economics, industrial arts.

The principal feature of the Fa Ngum Comprehensive Schools is that they educate both the mind and the hand. Graduates will be able to secure employment in many kinds of work or continue to more advanced levels of education including foreign universities.

The Fa Ngum teachers and administrators are genuinely interested in the total development of their students. They have included curriculum content, activities and attitudes within the school programme which give the students opportunities to learn industriousness, responsibility, initiative, innovation, integrity, honesty, cooperation, informed parenthood, and worthy citizenship.

The students have continuously off-campus contact with the community through frequent trips and cooperative enterprises. They are commended and awarded for outstanding achievements and for good moral behaviour.

*From Page 1*

ly testing the feasibility of programmed teaching under Asian conditions. One hundred first grade children in a rural Malaysian community are being taught beginning reading of the Malaysian language 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?

The research is being undertaken in 10 rural elementary schools in the Pontian (Johore) district of Malaysia. To maximise the homogeneity of the language background of the pupils, only Malay stream schools

were selected. A sample of 100 children was chosen to represent the lower half of the first grade population as measured by teacher ratings and a specially constructed readiness test. They are given one-half hour instruction daily by the programmed teachers in addition to their regular period of instruction in Bahasa Malaysia. Matched controls from the same classrooms receive a corresponding period of additional instruction by their regular teachers. The programmed teachers were given approximately 16 hours of formal training supplemented by on-the-job supervision. The duration of the experiment is three months, including approximately 60 teaching days. Performance of the children will be

evaluated at the end of this period by individual and group tests designed to evaluate material taught by both the supplementary and the regular teachers.

The teaching is being done by five supplementary teachers and one supervisor, all of whom are graduates of the local elementary schools having no additional training beyond that provided in the experiment. Research personnel include Mr. Chiam Tah Wen and Miss Le Thi Kim Hai from the INNOTECH staff, Mr. Khamis Noyo, Mr. Ishak bin Khamis and Mr. Moua Lia, INNOTECH interns, and Dr. D.G. Ellison, advisor.

A full account of the experiment will be completed about June 15 and issued as an INNOTECH report.

## REGIONAL EDUCATIONAL DEVELOPMENTS

— AN INFORMATION EXCHANGE  
SERVICE OF INNOTECH

# PLAN TO ASSIST STUDENTS

by Pedro T. Orata

A PROJECT TO HELP  
BARRIO HIGH SCHOOLS AND  
COMMUNITY COLLEGE  
STUDENTS TO EARN THEIR  
TUITION FEES AND TO  
CREATE JOBS FOR  
THEMSELVES

**I**N the Philippines and other developing countries today and in many years to come, educational opportunity is denied to half or more of children and youth of school age because of lack of funds to provide school facilities and pay teachers' salaries. In the Philippines, according to a recent report, "8.4 million children and youth — age 5 to 24 — are out of school. Among these are 200,000 children a year who are seven years old." Thus, for every child in school, 1 is out of school.

During the last eight years, a way has been discovered to solve this problem. *First*, the opening of barrio high schools, preschools and community colleges near the homes of the pupils by making use of existing school facilities in barrio and central schools. *Secondly*, to provide able-bodied boys and girls with opportunity to earn their tuition fees and other school expenses, as part of their preparation for life and for creating jobs for themselves. *Thirdly*, the students improvise their own science equipment and help improvise play equipment for preschool children out of "junk" or scraps. An example is a water microscope, costing nothing, which can magnify an object a hundred times.

### The Piglet Project — a solution

One of the most successful projects to help students to earn their

school expenses is known as the *piglet project*. A boy or girl is given a piglet to take care of and raise, and to sell it after eight or nine months. With the amount that they receive, they pay their tuition fees, pay back the cost of the piglet (which is used to buy another piglet to be given to another student), and buy their own piglet to raise.

This project was undertaken in two barrio high schools. In one of these, Baotad, where the barrio high school movement started in 1964, *The Asia Foundation* made available in 1971-72, P1,500 (the equivalent of \$230). This amount was used to purchase 26 piglets, 24 of which were given to an equal number of students (boys and girls) and the remaining two, to teachers, who took care of the same for breeding purposes. The results have been most encouraging.

To cite one example: A first year student took care of a piglet, which cost P50. With the help of her father, she built a bamboo pen for it, raised vegetables in the backyard for its food, and — after eight months — she sold it for P200. In fulfillment of the agreement, which she signed, she used the amount as follows: she paid her tuition fee of P90 (for the whole year); returned the cost of the piglet (P50) plus 20% (for replacement of piglets that might die) — total P60; and bought her own piglet (P50). Thus she continued to benefit from

the aid this school year, 1972-73, and made it possible for another student to so benefit.

Of the 26 piglets that were distributed six died. The 20% interest paid by the students, whose piglets survived, nearly equalled the amount needed to replace the 6 piglets that died. In any case, in the following school year, 1972-73, the majority of the students were able to sell their pigs, to pay back the amount used to purchase the piglets given to them, and to buy their own piglets to raise. Instead of 26 students benefiting from the P1,500 aid in 1971-72, more than 50 do so this school year (1972-1973), most of the original beneficiaries and an equal number of new ones.

Many favorable comments have been received on this project. Dr. Clair Turner, health education adviser of World Health Organization and UNESCO, and Honorary President of the International Health Education Association made this statement:

"You ask me my reaction to the piglet project. I think it is marvelous as a means of creative education. In the early days of this country when a large part of the population lived in small farms it was very common for the family to give each child a young animal (pig, lamb or calf) to raise and to sell. The educational value was tremendous. The child learned responsibility for rats—

Continued Overleaf

ing the animal and the economics and production. Some of our serious problems today have resulted from the urbanization and industrialization of our population in which the child is brought up in the city apartment without the learning and responsibility which was generated by the care of an animal with its respect for private property."

For this project, we are starting this school year, 1973-74, with the following amounts: P4,000 from *The Asia Foundation*, P9,150 from the 14 percent interest of P64,500 (the equivalent of the \$10,000 *Magsaysay Award*, which I received, in 1971); and some P5,350 from UNESCO or a total of P18,500. As luck would have it, we have just received \$1,000 from the Director of the UNESCO Centrum Nederland, which will be equivalent to P6,500. So, the total amount that may be used to buy piglets this coming school year (1973-74) will be P25,000. At P1,000 per barrio high school, this will benefit in 1973-74 25 barrio high schools in an equal number of school or city divisions, and from 300 to 500 students.

But we need more -- very much more -- for our 250,000 barrio high school and community college students. We hope therefore to receive more support from UNESCO in the form of UNESCO coupons, the ASIA FOUNDATION, and other sources. Our supporters everywhere will be rest assured that with \$15 they can help one student to go through a four-year high school, and with \$45, through a four-year community college.

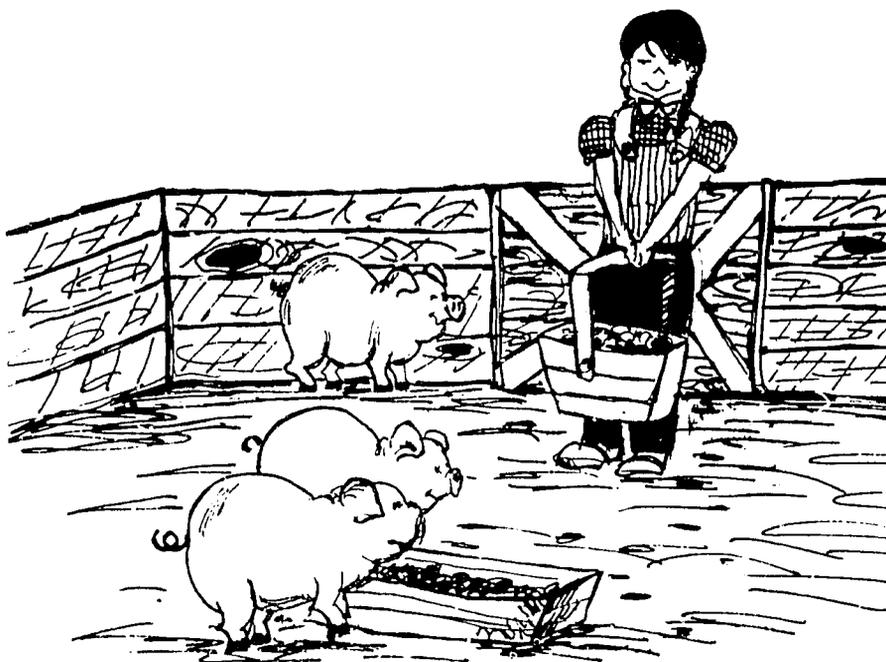
#### THE AID REVOLVES AND SNOWBALLS

Unlike other forms of aid, i.e. scholarships, which last for only a year or so, any contribution to this project will receive from year to year and, furthermore, it snowballs, as it were in its beneficial effect. In the first year, one student receives the benefit; in the second year, the same student continues benefiting from it, but in addition, another student is aided. So each student that is helped, helps himself and other students. So a P50 given in 1973 will benefit

one student during the school year, 1973-74. In the next school year, 1974-75, the same student continues to benefit from the aid -- by taking care of and selling his own piglet; but he also helps another student who receives the piglet purchased with the amount that he refunded.

In this way, a little amount, say P50 or a little more, if wisely used to help students to help themselves and each other -- we should like to emphasize the phrase "To help themselves and each other" -- will go a long way, much longer way, than larger amounts for scholarships or loans.

In closing, we must emphasize that the ones we intend to help are the boys and girls who live in the barrios, who have to eat and sleep there, whether they go to school or not, but who have no money or means to earn money to pay their tuition and other school expenses, and who otherwise are deserving of the aid because they not only desire to be assisted but to assist their classmates as well. They take care of their piglet very well knowing that if successful, they can not only pay their tuition fees, but they also pay back the cost of the piglet for one of their classmates to have and



We must make sure -- doubly sure -- that the help that is given is not misused by the student or by his parents. We have heard of a similar project where the aid amounts to P500 or more to enable the beneficiaries to buy feeds for their pigs or chickens. One observer reported that in a few cases that he observed part of the amount was used by the parents for purposes other than those for which it was intended. This is not only graft but it results in mis-education both of the children, for whom the aid is intended, and the parents, who are supposed to help them to help themselves and their fellowmen.

buy their own piglet to keep and raise, to enable them to finish, not only high school but college as well.

I repeat, doing all this will enable the students to learn the economics of production of piglets, so that in case after graduation from high school or college they fail to get jobs elsewhere, they can make a living for themselves and their families by raising pigs, chickens, calves, and similar animals.

Pedro T. Orata  
Office of the Special Consultant  
Secretary of Education and  
University of Pangasinan Urdareta,  
Pangasinan Philippines.

## DIRECTOR'S CORNER

by LY CHANH DUC



THE new term "educational technology" or "instructional technology" has certainly thrown a great deal of confusion among educators. At INNOTECH, which happens to have chosen the term for its name, there has not been any less confusion among the staff. To make matters worse, some experts have even insisted that we should talk about "educational technologies" (plural) because in their opinion there are many such technologies.

For this issue, therefore, I think it is appropriate to select a few of the better definitions of educational technology for the benefit of our readers.

Clifford H. Bloek of USIAD has tackled the problem in this way:

"We will encompass two elements when we use the term educational technology:

1. Devices for delivering informational and educational materials particularly the newer electronic media of television, films, radio, computers etc., together with the older technologies such as textbooks.
2. A set of methodologies for organizing the content of the educational process. That is, a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction." (Communication and Development: Educational Technology, a paper for the Colombo Plan Conference of National Information Officers, New Delhi, 1 November, 1972 p.1)

Henri Dieuzeide of UNESCO preferred the term "technology of education" and defines it thus:

"Technology of education is the systematic application of the resources of scientific knowledge to the process that each individual has to go through in order to acquire and use knowledge." (Educational Technology and Development of Education, Educational Broadcasting Review, August 1971, p. 32)

In his book, "The World Educational Crisis" (1968), Philip H. Coombs gave the following definition:

"Educational technology, broadly conceived, includes all the different methods, materials, equipment, and logistical arrangements employed by the education to further its work. These range from the lecture method to the Socratic dialogue, from the seminar to the drill session. They include the blackboard, desk, and textbook; the pupil-teacher ratio and the layout of classrooms and corridors; the chronological grade system, the academic calendar, and the school bell that punctuates time into modular units; the examinations and grades that influence the students' futures. Each of these is an 'integral' part of a system and a 'process' whose ultimate objective is to induce learning.

Recently the AICE Committee for Definition and Terminology produced a lengthy and most comprehensive statement on the field of educational technology in which the following definition appears:

"Educational technology is a field involved in the facilitation of human learning through the systematic identification, development, organization, and utilization of a full range of learning resources, and through the management of these processes. It includes but is not limited, to the development of instructional systems, the identification of existing resources, the delivery of resources to learners, and the management of these processes and the people who perform." (Audiovisual Instruction, October 1972, p. 36)

The Committee, however, has this warning to make: "Nothing less than the *entire* statement constitutes a definition of the field. Further, no definition of this growing and changing field, including this statement, can be considered final." (op. cit., p. 37)

In more simple language, Dr. Douglas G. Elson of INNOTECH has defined educational technology as:

"The systematic application of scientific knowledge to the process of teaching. The sciences that are applied include the science of psychology and the science of management far more often than the physical sciences." (INNOTECH Newsletter, Vol. I, No. 3, p.4)

INNOTECH feels that any of the above definitions is good enough for the work it is now undertaking. However, we would like to join Donald P. Ely, Chairman of the Committee mentioned above, in inviting suggestions and comments from our readers on this interesting problem which is the concern of us all.



**TRAN THI  
BICH SAN**

**B**EFORE I joined the INNOTECH Interns Programme I was a teacher at the Saigon Normal School. I applied for this Third Interns Programme because educational problems have always interested me.

During the first three months of our training we learned to apply systems approach to problem solving. The systems approach is the coordinating scheme of the training and research activities at INNOTECH. It has brought together the various aspects of planning, programming and management to make maximum progress at minimum cost and time.

We are now working on our regional research projects and I feel that the training at INNOTECH was quite an experience for me and has affected me in some ways.

It is interesting to realise that there are certain common patterns and also common major educational problems in the SEAMEO countries.

I do hope that after this training, I can do something to solve some educational problems in my country through the use of the progressive methods I have learned at the INNOTECH Center.

## *The interns speak out:*



**KHAMIS  
NOYO**

**I** was a School Administrator, in charge of the staffing of secondary schools and of the Special Project Classes in the Department of Education, Kota Kinabalu, Sabah, East Malaysia. I have held that post since January, 1971. Before that I was a Principal of one of the Secondary Schools in the State.

I was really fortunate to have been nominated by the Ministry of Education, Malaysia and eventually selected to undergo the 9-month research and training programme at the INNOTECH Center in Singapore. This programme emphasises the Systems Approach as a method and educational technology as a means to educational improvement in this part of the region.

After having undergone intensive three-month training to master the concept and tools of systems approach to educational problems, I was fortunate to have been selected to work on an Experimentation Project under the direction and instruction of Dr. Douglas G. Ellson.



**HELEN A.  
MANAMPAN**

**I**NFORMED that I was to undergo training at the INNOTECH Center on Systems Approach as a means to solving educational problems, a question kept lingering in my mind, why would it take so long to learn a particular approach?

Now I realise how much there is to learn about the systems approach, educational innovation and technology. And at INNOTECH it is "learning by doing" which is a wonderful experience. I cannot find enough words to thank the INNOTECH Center officials and my Ministry for giving me this opportunity.

I am an elementary teacher and I will have no problems in translating into action what I have learned here. To define objectives in observable and measurable behavior will be useful not only in my teaching career, but in my life as well.

There are many ways to achieve one's aims, but I think the systems approach is the most effective.



**ANNE  
CHI**

**A**LTHOUGH the main part of my learning and training at INNOTECH has been concerned with the Systems

Approach to Problem Solving, I feel that, like every novice, you have only scratched the surface, so to speak -- until you actually encounter real-life situations in your own work and are able to apply your learning with a certain measure of success. As such, the test for each of us is still to come since we have

yet to return to our individual countries. However, besides this, I have personally found it an interesting intellectual experience to have been exposed to material on educational problems in SEAMEO countries, to educational technology, and to social contact with fellow interns from this region.

Seminars
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Seminar A: AED/INNOTECH Seminar on Educational Technology

- Purposes:
- (1) Review, discuss and evaluate the AED Handbook and Film on Educational Technology. (The stated (contracted) purposes of the Handbook and Film was to provide administrators with the information necessary for making policy decisions on the introduction of educational technology into school systems).
  - (2) Elicit advice and suggestions from AED about the consonance of INNOTECH's activities with the Centers' stated objectives.

Summary Description: The Seminar was held on 10-13 April 1973 with the following presentations:

- ... (Film) Educational Television in El Salvador and Niger.
- ... Issues presented in the AED Working Paper on Educational Technology in Developing Countries by Mr. Miller (AED).
- ... New Developments in Educational Technology in the U.S. by Dr. Tickton (AED).
- ... How to Improve Teaching by Dr. Short (University of Virginia).
- ... Approaches to use of Technology for Specific Difficult Problems such as Medical Education by Dr. Miller (AED).
- ... The Evaluation of Cost and Benefits by Mr. Tickton (AED).

The third day of the Seminar was held at INNOTECH. It was a restricted meeting attended only by the AED representatives, Dr. Robert Jacobs, and INNOTECH Professional Staff. The purpose of this meeting was for the two groups, the AED group and the INNOTECH Staff, to be as candid as possible in their assessment of each other's work.

Progress: The final seminar report is at the printer.

Evaluation: On the one hand, it was expected that the AED group would give the INNOTECH Staff some advice as to whether the Center's training and research activities to date were in consonance with the stated objectives and functions of the Center. It turned out, however, that the AED group had not had time to study the various INNOTECH reports, and as a result, did not have much to say about the Center's programmes and activities.

On the other hand, the INNOTECH Staff, being keenly interested in the AED Handbook and Film on Educational Technology, did have a lot to say about the AED product. Their frank remarks could be summarized as follows:

- a) Although the film presents much that is of interest on ETV in El Salvador and Niger, it would be helpful if its scope were broadened to give an educational administrator more insight into the potential of ETV.
- b) The handbook would be of more use to the reader if its objectives could be made more explicit. Perhaps the objectives also should be given a narrower focus since the handbook covers a more narrow range of technologies than one would expect from its objectives.
- c) There is a fundamental difference between what Agency for International Development (AID) asked AED to do as embodied in the document entitled "Preparation of a Handbook and Film on the Use of Technology to Improve Education in Underdeveloped Countries" (July 1969), and what is stated in the Preface and the Introduction of the handbook.

We have been negligent in getting this report to the printer. Our problems stemmed from our initial decision to reproduce discussions from tape recordings. Once we decided simply to print the papers, we were able to prepare the report in short order.

**Seminar B: Regional Seminar on Effective and Economical Delivery of Mass Primary Education**

- Purposes:**
- (1) Exchange information about key programmes in the delivery of primary education.
  - (2) Elicit ideas from a select committee of participants on potential directions that the INNOTECH research programme could take in relation to this problem.

**Summary Description:** The Seminar was held in the Singapore RELC Building, February 19-23, 1973.

In his opening address Mr. Ahmad Mattar, Parliamentary Secretary to the Ministry of Education, Singapore, said that as was the case with other countries in the Southeast Asian region Singapore's educational system was still predominantly a traditional one, "we therefore welcome an opportunity to reassess what we are doing and to find out whether there are better ways of doing it. I believe this Seminar offers that opportunity and I congratulate INNOTECH for its timely initiative."

Dr. Sudjono D. Pusponegoro, SEAMES Director, said in his message that "the original scope of INNOTECH is so vast and all-embracing that it has become incommensurate with its resources and capabilities. The proposed concentration upon seeking solutions for the problems of mass primary education will give INNOTECH a clear direction in which it can move."

Mr. Ly Chanh Duc, INNOTECH Director, stressed that "assuming that an effective and economical delivery system were found, the success of the whole project will depend on the extent to which the member countries will make use of the published results." He further

said that "innovation is a difficult area in which to work. On the other hand complacency and inertia will only draw us nearer and nearer to what many leading educational thinkers have termed "educational bankruptcy." Mr. Duc concluded his address with a question from Andre Gide who said that "Man cannot discover new oceans unless he has the courage to lose sight of the shores."

There were seven plenary sessions in all, the first six were devoted to presenting working papers, and the seventh for the adoption of the final report. There was also a Select Committee Meeting which held two sessions concerning INNOTECH's role in developing solutions to the mass delivery problem.

The head of each country delegation was requested to chair one plenary session, and a member of each delegation was asked to act as rapporteur of one session.

The working papers are listed below in their order of presentation.

- 1) Community Education versus Traditional Education  
by Dr. Nguyen Quy Bong (Vietnam)
- 2) Reducing Cost of Primary Education  
by Dr. Kaw Swasdi-Panich (Thailand)
- 3) Primary Pilot Study  
by Mrs. Yeo Lai Cheng (Singapore)
- 4) Meeting the Social Demand for Education at the  
Primary Level  
by Dr. Liceria B. Soriano (Philippines)
- 5) Methods of Dealing with the Problem of Developing  
an Effective and Economical Delivery System for  
Primary Education  
by Dr. Atan Long (Malaysia)
- 6) Community Schools in the Khmer Republic  
by Mr. Nhoeng Nhan (Khmer Republic)

- 7) Reform of Primary Education  
by Mr. Sounthong Khamsingsavath (Laos)
- 8) How to Approach the Problem of Developing an  
Effective and Economical Delivery System for  
Primary Education  
by Mr. Hussin (Indonesia)
- 9) Minimum Formation Education - An Ethiopian Venture  
by Mr. Haile Yesus Abeje (Ethiopia)
- 10) The Systems Approach to Satellite Education in  
Brazil  
by Dr. Mary Anne Cousack (Brazil)
- 11) An Experiment on Teaching by Non-Professionals  
from the Rural Community  
by Dr. Douglas G. Ellson (INNOTECH)
- 12) Southeast Asia Primary Science Project (SEAPS)  
A Regional Co-Operative Venture  
by Mr. Chin Pin Seng (RECSAM)
- 13) Educational Television for National Development  
- the El Salvador Reform Program  
by Dr. Stanley Handleman (El Salvador)

The fourth day of the brainstorming session of a select committee made up of INNOTECH staff, speakers, heads of delegations and invited participants from RED and IDRC. The results of that meeting can be seen in this report as Study B: Planning Document for 1973-74 in the section on Research and Development.

Progress:

- (1) The planning document for INNOTECH research is completed.
- (2) The final report of the Seminar is at the printers.

Evaluation:

On the whole, the seminar was successful. The papers typically were well-prepared and discussions were to the point. INNOTECH gained needed insights for its research planning.

Seminar C: Future Seminars

The intention is to maintain a problem orientation to future seminars. Typically, the problem will be one which the research staff is working on. The tentative schedule (and possible topics) for the next seminar:

12 - 16 November 1973

SAIGON

Alternative #1: "How to reduce the number of years in primary school."

Alternative #2: "High student-teacher ratios in primary education."

A decision on dates and topics will be made during the next month, and invitations will be sent before our move to Saigon.

One problem that we are trying to solve concerns funding for non-regional participants. In the last seminar, Asia Foundation and IDRC funded three non-regional speakers, but lateness of assured funding required a flurry of expensive cables all over the world. We badly need some \$30,000 per annum as a permanent endowment for this purpose. A plan for finding a source for these funds will be developed before 1 June 1973.

Research Reports
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The following reports have been printed in the past six months or are presently at the printer:

- Self-Help Barrio High Schools  
by Dr. Pedro T. Orata
  
- INNOTECH Regional Practicum on Alternatives in Education -  
Final Report - INNOTECH/RP/7 October 1972.
  
- AED/INNOTECH Seminar on Educational Technology - INNOTECH/AIS/7
  
- INNOTECH Regional Seminar on Approaches to Effective and Economical  
Delivery of Mass Primary Education - Final Report - INNOTECH/RS-73/7
  
- SEAMEO/DSE Seminar on Problems of Promotion and Production of  
Educational Materials in Southeast Asia - Final Report - DOK 665 A/a  
IIA-IT4/72(ex)
  
- Seventh Meeting of the INNOTECH Governing Board - Final Report  
INNOTECH/7BD/72

## **III. APPENDICES**

- A. Excerpts from Teachers Guide for Programmed Teaching
- B. A Proposed Pilot Study of Five Alternative Models  
(Life-Skills Objectives)
- C. Sample Training Module

**TEACHER'S GUIDE**

**A Teaching Program**

**BEGINNING READING, BAHASA MALAYSIA**

**Experimental Edition**

**English Version**

**(Revised) March, 1973**

**Regional Center for Educational Innovation and Technology  
Southeast Asian Ministers of Education Organization**

**January 1973**

## TEACHER'S GUIDE

### Introduction

Beginning Reading is an experimental program designed to teach the skills necessary to read and understand material written in Bahasa Malaysia at the beginning level. It utilizes the technique of programmed teaching, which enables non-professionals to teach effectively after a very short period of training. There are two major teaching aims:

1. To teach the sounding-out skills -- those skills which enable a reader to look at and pronounce a word which he has not read before. To do this, he must know the sounds of the letters and the technique of "sounding out", that is, of pronouncing sequences of letters so that he can recognize the resulting combination of sounds as a word whose meaning he understands. The limited objective of the present program is to develop the skills necessary to sound out one and two syllable words.
2. To teach the reading of sentences for meaning. The limited objective of the present program is to teach children to read and understand short sentences which they would be able to understand if the sentences were presented orally.

To achieve these objectives, the learner is first taught the names and sounds of a few letters which are then combined to form a small number of short words and sentences. Other letters are progressively added and the number and length of words and sentences is increased. As the learner acquires the skills required to sound out words and sentences, he is also taught to recognize their meanings. Lessons in which these skills are taught are alternated with games designed to provide motivation and to review what has been learned.

The syllabus or content program just outlined specifies what is to be taught and the sequence in which it is to be taught. This is supplemented by operational programs which specify in detail how the teaching is to be done.

Operational programs in Beginning Reading are based on the results of many experiments in the field of scientific psychology which were carried out to determine the conditions which favor learning. The most important of these results are presented in two principles which are summarized below:

1. Most learning occurs on the first occasion or the first few occasions that the learner responds correctly and knows that he has done so. (Praise is a most effective way of letting the learner know that he was successful.)
2. Little or no learning occurs when the learner fails and knows that he has failed. (Failure in public often produces a dislike or avoidance of the situation in which the failures occur.)

From these principles it follows that in order to learn a child must be given many opportunities to respond in new situations -- he must do what he is expected to learn. This principle is often violated in the classroom. The common classroom practice of calling only upon children who hold up their hands to indicate that they know the answer does not provide favorable conditions for learning. It simply gives the children who learn fast the opportunity to demonstrate what they already know. Perhaps more important, this custom neglects the children who most need to learn -- those who do not hold up their hands. These children do not get the opportunity to try -- which is necessary for learning.

Operational programs in Beginning Reading are designed to remedy these common defects of classroom custom. In these programs children are called on by chance. Every child is allowed -- actually, required -- to participate. If he answers correctly, he is not called on again until every other child in the class has had an opportunity. If he answers incorrectly, he is given another chance. As a result, the opportunity to try is greatest for those children who most need the practice in order to learn.

To learn, the child must have many opportunities to respond in situations where he is likely to succeed. And when he succeeds he must be recognized. This principle may also be violated in the classroom. Pupils are often not expected to succeed. It is generally assumed that learning must be difficult. When a child responds correctly, teachers often say nothing, but they criticize him when he fails. In Beginning Reading, the learning tasks are intentionally made easy and the program requires the teacher to take every opportunity to praise the child when he succeeds.

In order to learn there should be relatively few failures and when they occur they should not be emphasized. The child should not be punished or ridiculed when he fails. This principle also is not always followed in the classroom. In Beginning Reading, failure is given little emphasis or ignored entirely. It is recognized only by the omission of praise and by teaching the correct response.

Emphasis on errors can seriously disturb the learning process, especially for slow learners, who are likely to be oversensitive to failure, particularly when it occurs in public. For this reason the teacher does not call attention to pupil errors by obvious actions such as shaking her head or negative remarks such as "no"

or "wrong" and certainly not by punishment. Instead, when a pupil makes an error, the teacher makes no comment. She simply goes to the next step in the program, which is usually designed to teach the correct response. This does not mean that the pupil does not know that he has made an error -- the absence of praise alone is sufficient to inform him, without producing the embarrassment which causes slow learners to dislike school.

The most inexperienced teacher -- or a non-professional with no teaching experience at all -- can satisfy these principles for good teaching simply by following the operational programs of Beginning Reading exactly. The instructions for doing so are provided in the Lesson Programs and the Item Programs which appear later in this book.

To summarize: in Beginning Reading the sequence of learning tasks (the content or syllabus program) and the teaching procedures (the operational programs) are designed in combination to provide good conditions for learning. The pupil does not learn by passively listening to the teacher or to children who know the answers; he learns by actively responding to what he sees and hears and by being praised for successful performance of new learning tasks. At first these tasks are easy; they become progressively more difficult as reading skills are acquired. While success is emphasized by praise, failure is essentially ignored.

### Teaching Materials

The material used in teaching with the Beginning Reading program includes a kit of teaching equipment and materials, a Teacher's Guide and a Record Book. The kit includes a blackboard modified by the addition of slots to display flash cards, sets of letter, word and picture cards, paper and other writing materials, scissors, and a clock. The Teacher's Guide describes the materials to be presented and the sequence of presentation, and it includes detailed instructions (operational programs) for teaching. The Record Book provides spaces for recording attendance, daily progress through the Syllabus and other information.

The letter, word and picture cards are arranged in sets as follows.

Letter Set A	a b d i n s u y I S U Y
Letter Set B	e k p w K P W
Letter Set C	c g h m t C
Letter Set D	f j l o r J O
Letter Set E	d e l p s t D E L P S T
Letter Set F	A B C F I K M W
Letter Set G	G H J N O R U Y
Word Set A	Awak, Abu, Bapa, Ali, Ibu, Fatimah
Word Set B	ada, ibu, buku, nasi, Saya
Word Set C	ada, buku, saya, awak, bapa, adek, kakak, suka, ibu, nasi
Word Set D	nama, siapa, baik, che'gu, abang, adek, tak, saya, kakak
Word Set E	foto, kapor, buku nota, meja, di atas, di tepi, kerusi, bangku, beg sekolah, Apa
Word Set F	Satu, Dua, Tiga, Empat, Lima, Enam, Tujuh, Lapan, Sembilan, Sa-puluh, Sa-belas, Dua-belas, Pukol (each with lower case also).

Word Set G	Adek, Buku, Itu, Foto, Kakak, Cuti, Meja, Wayang
Word Set H	Guru, Hitam, Jalan, Nasi, Orang, Rumah, Udang, Yang
Numeral Set N	1 - 12
Picture Set A	6 pictures: of Abu, Bapa, Ali, Ibu, Fatimah, Awak
Picture Set B	12 pictures: of a school bag, note book, book, desk, bench, chair, door, window, ruler, fan, rice, mouse.
Name Cards	12 blank cards 2" x 8"
Reward Cards	12 colored cards 2" x 6".

There are no textbooks for the children. However, later in the program the children read from their classroom readers and the pupils may be given one-page hand-outs which they are allowed to take home. Tests are given at the beginning and end of the program.

#### Definitions

The Beginning Reading program consists of a sequence of teaching and review lessons. A teaching lesson consists of several rounds in which each child in the class is given an opportunity to perform a task with a number of items. The review lessons are games in which members of two teams score by demonstrating what they have learned. The elements of a lesson are the round, the task and the item.

An Item is a basic unit of reading material. An item may be a letter, a word, or a sentence which the pupils must learn to identify, sound out, read, etc. in the process of acquiring the complex skill of reading.

A task is the performance of one form of a single skill which is necessary in order to read or to learn to read. The basic reading skills taught in Beginning Reading are (a) identifying letters (and a few whole words) by naming or pointing to them when they are named.

(b) giving the sounds of letters or sequences of letters, (c) sounding out words (pronouncing a word after pronouncing the sounds of the letters in it), (d) oral reading of words and sentences and (e) reading words and sentences for meaning. The performance of one of these skills or some part of it in response to a question or an instruction is a task. Examples of tasks are naming a letter in response to a question such as, "What is this letter?" or pronouncing the letters of a word and the word as a whole in response to an instruction such as, "Sound out this word." In order to be able to read well, a pupil must be able to perform all of these skills and perform each of them with many appropriate items such as letters, words and sentences.

A lesson is a procedure used to teach a group of children to perform a single task with a number of items: for example, one of the lessons teaches the sounds of eight letters in response to the question, "What is the sound of this letter?"

A lesson-task is the single task that is applied to a number of items in a given lesson. The task is taught with one item at a time by means of an appropriate Item Program (see below).

A round is a part of a lesson in which a lesson-task is presented to a group of children one at a time until each child has performed the task successfully with one item. A lesson typically consists of a series of rounds which are continued until a perfect round is achieved.

A perfect round is a round in which each child in the group answers correctly the first time he is called on. The perfect round serves as the "lesson criterion", which signals that a lesson has been completed and that the teacher should go on to the next lesson.

### The Programs

In Beginning Reading, what is taught and exactly how it is taught are specified by programs. There are three types of program:

1. There are four Item Programs, each of which specifies a procedure for teaching a task or skill with a single item.
2. There are two Lesson Programs, each of which specifies a way of teaching a task or skill with a set of items. One, called the Game Program, is a set of rules for a game used with any task and set of items to review skills already learned.
3. There is one Syllabus Program, which specifies the lessons and the order in which they are taught in the Beginning Reading program as a whole. For each lesson, it specifies the set of items and the task which are to be taught or reviewed. In the case of teaching lessons, it also specifies which item program is to be used.

Before she begins, the teacher will consult the Syllabus Program to determine which lesson is to be presented next, and what teaching materials and procedures are to be used. For a teaching lesson the details of the procedure she uses are specified by (a) the Lesson Program and (b) one item program. For a review lesson the procedure is specified by the rules of the Game Program.

An outline of the three types of program appears in Figure 1.

### The Item Programs

An Item Program is a procedure for teaching the performance of a lesson-task with a single item. The procedure of each item program is designed to be used with several forms of the task and

Syllabus Program

Specifies:

- Sequence of lessons
- Type of lesson (teaching or review)
- Content of lesson (items)
- Teaching procedure (Game or Item Program)

Lesson Programs

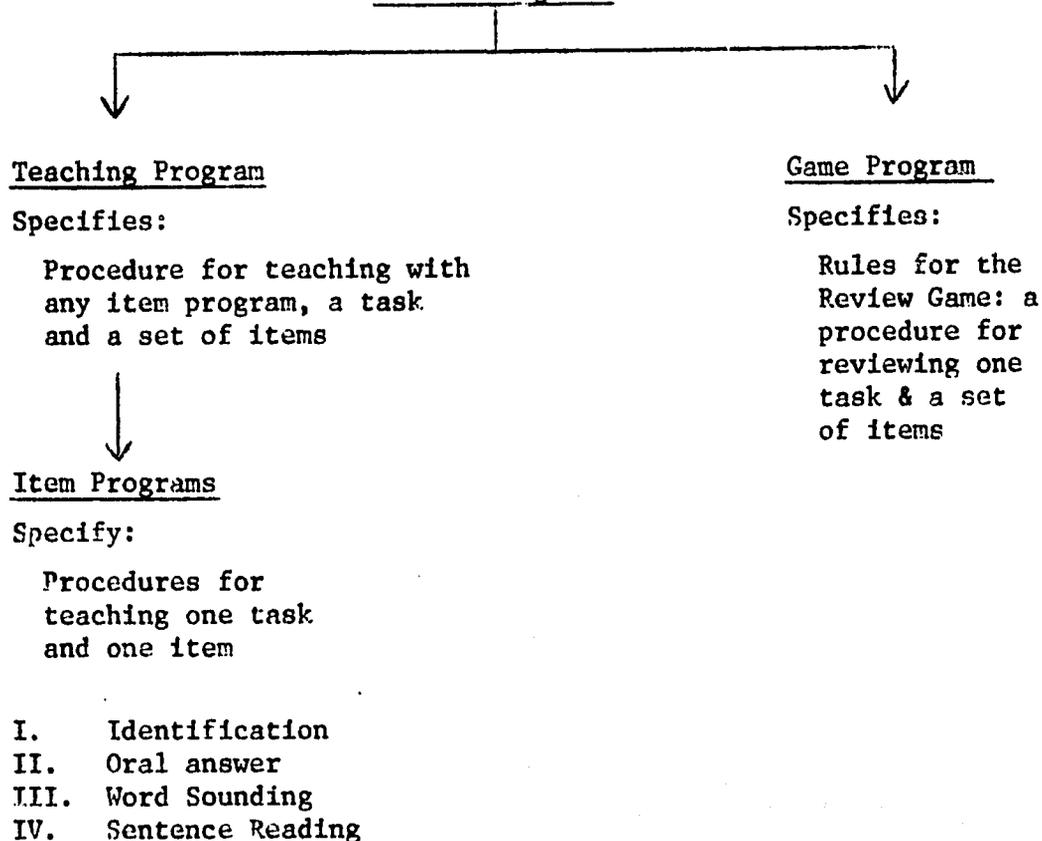


Figure 1

Outline of Beginning Reading Programs

any item appropriate to that task. For example, the teacher may point to the letter A and say "What is the name of this letter?" The item program provides detailed instructions for the procedure which teaches the pupils that the name of the letter pointed to is A. The same item program may be used with other letters and with other questions and instructions which require the pupil to perform similar tasks such as giving the sounds of letters or reading single words. Other item programs are used to teach other tasks, such as reading a sentence when the names and sounds of many letters have previously been learned.

There are four Item Programs:

- I. The Identification Program. This program specifies the procedure when the task is to point to (identify) an item by responding to a question or instruction such as, "Which is the letter A?" or "Point to your name on the board."
- II. The Oral Answer Program. This program specifies the procedure when the task is to name a letter, to give the sound of a letter or to read a word which the pupil is not prepared to sound out. Typical questions are "What is the sound of this letter?" or "What is this word?"
- III. The Word-Sounding Program. This program specifies the procedure when the task is to read a word when the pupils know the sounds of the letters in the word. A typical question is "What is this word?".
- IV. The Sentence-Reading Program. This program specifies the procedure when the task is to read a sentence when the pupil knows the sounds of all of the letters used in the words of the sentence. (He may also be able to read some of the words.) A typical question is, "Can you read this sentence?".

All Item Programs have a similar outline, which consists of two steps. In Step 1 the teacher calls on one pupil to perform a lesson-task; in Step 2 the teacher calls on the group as a whole to perform the same task. Step 1 is always a test and teaching step. It begins with a test - the presentation of the task. If the pupil performs the task correctly he is praised for doing so and the teacher goes to Step 2. If he does not perform the task correctly the teacher carries out a procedure designed to teach the pupil how to do what is required. When he does so the teacher praises him and goes on to Step 2.

In Step 2, which is always a teaching step, the teacher calls on the children as a group to perform the lesson-task. If necessary she shows them how to perform it correctly. In the Sentence Reading Program there is also a third step designed to increase the understanding of sentences which have been read in Steps 1 and 2.

Item Program I: Identification

This program specifies the procedure when the question or instruction requires the pupil to answer by pointing to a letter, a word, a picture, etc.

Step 1: Test and Teaching Step

- a. Ask the question or give the instruction that is indicated for the lesson in the Syllabus Program. For example, WHICH IS THE LETTER A? or, POINT TO YOUR NAME ON THE BLACKBOARD.
- b. Call on a child who has no reward card. If he does not understand, repeat the question. Then:
- c. If he points correctly, praise him and give him a reward card. Then go to Step 2.

If he does not point correctly, point to the correct item, read it to him and say, NOW YOU SAY IT. When he does so, praise him and go to Step 2. (Do not give him a reward card.)

Step 2: Group Response

Answer the question to the group by pointing and in words. For example, point to the letter A and say, THIS IS THE LETTER A. Then require an oral response from the group. For example, point to the letter and say, NOW, ALL OF YOU, WHAT LETTER IS THIS? When the group responds correctly, praise them. Then go to the next item.

END

Item Program II: Oral Answer

This program specifies the procedure to be followed when the lesson-task requires the pupil to (a) name a letter, (b) give the sound of a letter or (c) read a word which he is not prepared to sound out.

Step 1: Test and Teaching Step

- a. Present the task: for example, WHAT IS THIS LETTER? or WHOSE NAME IS THIS?
- b. Call on a child who has no reward card. If he does not understand, repeat the question. Then:
- c. If he answers correctly, praise him and give him a reward card. Then go to Step 2.

If he does not answer correctly, give the correct answer and require him to repeat it. For example, say THIS IS THE LETTER A. NOW YOU SAY IT. When he does so, praise him and go to Step 2.  
(Do not give a reward card.)

Step 2: Group Response

Repeat the question to the group.

If all or most of the children answer correctly, praise them and repeat the answer. For example, say THAT'S RIGHT, THIS IS THE LETTER A. Then go to the next item.

If a few or none answer correctly, give the correct answer and require them to repeat it. For example, say, THIS IS THE LETTER A. NOW YOU SAY IT. When they respond, praise them and go to the next item.

END

Item Program III: Word-Sounding

This program specifies the procedure to be followed when the pupil is asked to read a word when he is prepared to sound it out (when he knows the sounds of the letters). The word may appear alone or in a sentence. A typical question is, WHAT IS THIS WORD?

Step 1: Test and Teaching Step

- a. Ask the question (from the Syllabus Program).
- b. Call on a child who has no reward card. If he does not understand, repeat the question. Then:
- c. If he answers correctly, praise him and give him a reward card. Then go to Step 2.

If he answers incorrectly or does not answer, apply Procedure A.

Procedure A: Use prompts i to v until he gives the word. Then praise him and go to Step 2.

- i. WHAT IS THE WORD? If he answers correctly, praise him and go to the next word. If not, say:
  - ii. WHAT ARE THE SOUNDS OF THE LETTERS? Tell him the sounds he does not know. Then say:
  - iii. NOW, WHAT IS THE WORD?
  - iv. SAY THE SOUNDS OF THE LETTERS AGAIN, FASTER.
  - v. NOW, WHAT IS THE WORD?

If the pupil gives the word on any of these prompts, stop, praise him and go to Step 2.

If he does not give the word to prompt v, sound the letters for him, say the word and then say, NOW YOU SAY IT. Praise him when he does so and go to Step 2.

Step 2: Group Response

- a. Say to the group, NOW ALL OF YOU, SOUND OUT THE LETTERS, THEN TELL ME THE WORD.
- b. If all or most of the children answer correctly, praise them and repeat the answer. Then go to the next item.

If few or none answer correctly, give the correct answer and require the group to repeat it. For example, say AH, BUH, OO -- ABU. NOW YOU SAY IT. When they respond correctly, praise them and go to the next item.

Item Program IV: Sentence Reading

This program specifies the procedure for reading sentences with the aid of the sounding-out procedure. A typical question is, CAN YOU READ THIS SENTENCE?

Step 1: Test and Teaching Step

- a. Ask the question. For example, READ THIS SENTENCE.
- b. Call on a child who has no reward card. If he does not understand, repeat the question. Then:
- c. If he answers correctly, praise him and give him a reward card. Then go to Step 2. Call on him again in Step 3.

If he does not answer correctly, apply Procedure A to each word that he did not read correctly, then go to Procedure B.

Procedure A: Use prompts i to v until he gives the word.

Then praise him and repeat Procedure A for the other words that he missed. Then go to Procedure B.

- i. WHAT IS THE WORD? (Point). If he answers correctly, praise him and go to the next word. If not, say:
- ii. WHAT ARE THE SOUNDS OF THE LETTERS? Tell him the sounds he does not know. Then say:
- iii. NOW, WHAT IS THE WORD?
- iv. SAY THE SOUNDS OF THE LETTERS AGAIN, FASTER.
- v. NOW, WHAT IS THE WORD?

When he gives the word on any of these prompts, use no more prompts. Praise him and go to the next word.

If he does not give the word to prompt v,  
sound the letters for him, say the word and  
then say, NOW YOU SAY IT. Praise him when he  
reads it correctly.

Repeat Procedure A for each word missed. Then  
go to Procedure B.

Procedure B: Say, NOW CAN YOU READ THE SENTENCE?

If the pupil reads it correctly, praise him and  
go to Step 2. (Do not give him a reward card.)

If he does not read it correctly, read the  
sentence to him and say, NOW YOU READ IT.  
Praise him when he reads it correctly, then go  
to Step 2.

**Step 2: Group Response**

- a. Say to the group, NOW ALL OF YOU READ THE SENTENCE.  
Point to each word as they read.
- b. If all or most of the children read the sentence correctly, praise them and read the sentence to them again. If the question was answered correctly in Step 1, go to Step 3 and call on the child who answered correctly. If not, omit Step 3.  
If few or none read the sentence correctly, read the sentence to them and say, NOW READ THE SENTENCE AGAIN. When they do so, praise them and go to the next item. Do not go to Step 3.

**Step 3: Comprehension**

Step 3 is used only when the sentence was read correctly on Step 1 and Step 2.\* Call on the child who read it correctly in Step 1. Questions to be used are found at the right-hand side of the pages on which sentences appear (Lessons 13, 23, 25, 34, 40, 59).

- a. Ask the question which appears to the right of the sentence. If the pupil does not understand, repeat the question.
- b. If he gives an acceptable answer, praise him and go to the next item. (Do not give him another reward card.)  
If he does not give an acceptable answer, answer the question for him, then repeat the question and require him to answer. When he does so, praise him and go to the next item.

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**Note:** See also special instructions in Syllabus Program for lessons which use Item Program IV.

### THE LESSON PROGRAMS

A Lesson presents a lesson-task which is performed with a number of items. The pupils are called on one at a time or as a group to perform the lesson-task, each time with a different item. There are two types of lesson, teaching lessons and review-game lessons. The procedure to be followed in a teaching lesson is specified by the Teaching Program and one of the item programs. The procedure followed in a review lesson is a game for which the rules are specified by the Game Program.

For each lesson the Syllabus Program specifies the type of lesson, the task and the set of items to be used. For teaching lessons the Syllabus Program also specifies which Item Program is to be used. Review-game lessons do not use the Item Programs.

#### I. The Teaching Program

Preparation: Before beginning a lesson the teacher should first look in the syllabus program to determine the type of lesson, the task, the set of items and the item program to be used. She should then print the necessary items or arrange the item cards on the blackboard. Then, when all of the pupils' names are showing and the pupils are paying attention, she should begin the first round.

Procedure for the First Round of a teaching lesson:

- a. Use the task (question or instruction) specified for that lesson in the Syllabus Program. Follow the specified Item Program with each item in turn. The items may be presented in any order. Present all of the items on the board before presenting any item for the second time. Call only on children who do not have

reward cards, and call on them in chance order. Call on every child once before calling on any child for the second time.

(An exception may be made for very slow learners. A child who has difficulty in keeping up with the class should be called on early in each round and may be called on more often than other children.)

- b. Continue to follow the item program until each pupil has answered correctly on one item (until all children have received reward cards). This completes one round.
- c. At the end of the round, collect the reward cards.

#### Second and later rounds

- a. Leave the item material on the blackboard. Rearrange the letter or word cards if this is indicated in the Syllabus Program.
- b. Repeat the procedure described above for the first round.
- c. Continue until you reach the end of the lesson. See below for the rules for ending a lesson.

#### Rules for Ending a Lesson

##### 1. On Rounds 1 to 10:

End the lesson after any perfect round. A perfect round is one in which none of the children in the group makes an error on Step 1.

2. On Rounds 6 to 9:

End the lesson if two or less than two children make errors (if three or more than three children make errors, start another round of the same lesson.)

3. At the end of Round 10:

End the lesson. After 10 rounds the lesson is finished, regardless of errors.

4. When a lesson is completed or at the end of a teaching period, write the lesson information in the Record Book. Then begin the next lesson.

II. The Game Program

In the Review Game, two teams each try to gain the highest score by performing a lesson-task (answering a question or following an instruction) with items which have previously been taught.

To play the game the teams stand in two lines facing the teacher and the blackboard. On the board are pictures, words, etc. used in the game. The teams are given "turns" in which they can score 2, 1 or 0 points.

Preparation: Before beginning a review game, the teacher should first look in the Syllabus Program to determine the task and the set of items to be used. The names of the teams and the score required to win (30) should be printed at the top of the blackboard, and under this the teacher should print the items or arrange the item cards in the slots. At the same time the two teams should be lining up ready to play the game.

Rules for the Review Game

1. Each team is called on in turn. In a turn, the child at the head of the line is given a task and his performance is scored as follows:
  - a. If he performs correctly without help from other members of his team, he scores 2 for his team.
  - b. If he is not able to perform correctly he may ask for help from other members of his team. Then if he performs correctly he scores 1 for his team.
  - c. If he still can not perform correctly, he scores 0.At the end of the turn the child who was called on goes to the end of the line.
2. If the task was performed correctly during the turn (the score was 1 or 2) the other team is given a turn with a new item.
3. If the task was not performed correctly (the score was 0) the other team is given a turn with the same task and item.
4. If both teams fail to perform correctly the teacher demonstrates the correct performance, then gives the same task with a new item to the team whose turn is next.
5. The game ends when the total score for one of the teams equals 30. The team which reaches a score of 30 first is the winner.
6. If the teaching period ends before that number (30) is reached, the team with the highest score wins, but only if the score is 20 or more. If the score is 19 or less at the end of the period, there is no winner. The game is discontinued and begun again at the beginning of the next period.

Notes on the Review Game

1. The teams should be selected before the first Review Game.  
Select the teams so that they are as evenly matched as possible. To do so, list the names of the children with the fastest learner as number 1, the second-fastest as number 2 and so on, down to the slowest learner. Then assign children with odd numbers to one team and those with even numbers to the other team.
2. Let each team choose a name for the team, for example an animal, bird or color. Change the names when new teams are chosen.
3. Select new teams whenever either team wins three games in succession. (This indicates that they were not evenly matched).
4. Whenever a team wins, give a small prize to each member of the winning team. Prizes may be a sheet of colored paper, a cut-out paper badge, a flower to be worn, etc.
5. Use the scoring procedure to teach reading of the team names and counting. Print the names of the teams on the blackboard and also the score required to win (a score of 30). Mark the scores with 1's or vertical strokes; count them frequently and allow the children to count with you or by themselves.

The Syllabus Program

The Syllabus Program provides the overall outline of the Beginning Reading program together with information needed in preparation for each lesson. It lists the lessons in order and for each lesson indicates:

- a. The type of lesson (Teaching Lesson or Review Game).
- b. The task (Question or Instruction).
- c. The set of items to be used in the lesson.
- d. The Item Program to be used (Teaching Lessons only).
- e. Whether item-cards are to be rearranged between rounds (Teaching lessons only).
- f. Preparation necessary at the beginning of the lesson.
- g. Special procedures for particular lessons.

Syllabus Program

---

Lesson 1. Teaching Lesson.

Note: This lesson does not use any of the item programs. Instead it uses a special simplified item procedure which is given below.

Preparation: Print each child's name on a name card. Arrange the cards on the blackboard. Read each child's name as you place his name-card on the blackboard.

Step 1. Test and Teaching Step.

- a. Call on any child who does not have the card and say, WHAT IS YOUR NAME? (pause) POINT TO YOUR NAME ON THE BLACKBOARD.
- b. If the child points correctly, praise him and give him his name card.
- c. If he does not point correctly, point to his name card and say, THAT IS YOUR NAME. NOW YOU READ IT. When he does so, praise him and give him the card. Show him how to hold it so that his name shows.

Repeat Step 1 with each child who does not have a card until all children have received their cards. This completes the first round. Collect the cards, re-arrange them on the blackboard and begin another round. Continue until a perfect round is achieved.

---

---

Lesson 2. Teaching Lesson. Use Item Program I: Identification.  
Use Picture set A, Word-set A.

Preparation: Arrange pictures on board, showing faces. Put cards with names under each picture. Point to one picture at a time and tell the children the names. Then:

Step 1. WHICH OF THESE IS \_\_\_\_\_?

---

Lesson 3. Teaching Lesson. Use Item Program I: Identification.  
Use Picture set A.

Preparation: Remove the name cards used in Lesson 2. Arrange the picture cards on the blackboard face down (with the names on the back showing.)

Step 1. WHICH CARD IS A PICTURE OF \_\_\_\_\_?

Note: In Step 2, when you read the name on the back of the card, turn the card to show the face. After each round, rearrange the cards and replace them on the blackboard face down.

---

Lesson 4. Review Game. Arrange Picture Set A on the blackboard face down (with names on the back showing).

Task: WHOSE NAME IS THIS? (Point)

After a correct response or when you read the name, turn the card to show the face. Then replace it on the blackboard face down.

---

---

Lesson 5. Teaching Lesson. Use Item Program I: Identification.

Preparation: Arrange letter set A on the blackboard. Tell the children the names of the letters twice, in mixed order. Then:

Step 1. WHICH IS THE LETTER \_\_\_\_\_? or POINT TO THE LETTER\_\_.

Note: Rearrange the letters after each round.

---

Lesson 6. Teaching Lesson. Use Item Program II: Oral answer.

Use Letter set A.

Preparation: Leave the letters on the blackboard. Rearrange after each round.

Step 1. WHAT IS THE NAME OF THIS LETTER? (Point).

---

Lesson 7. Teaching Lesson. Use Item Program III: Oral answer.

Use Letter set A.

Preparation: Rearrange the letters. Point to each letter and tell the children the name of the letter and its sound. Then repeat once in a new order. Say, THE NAME OF THIS LETTER IS \_\_\_\_. THE SOUND OF THIS LETTER IS \_\_\_\_.

Step 1. WHAT IS THE SOUND OF THIS LETTER? (Point)

Note: Rearrange after each round.

---

---

Lesson 8. Teaching Lesson. Use Item Program II: Oral answer.  
Use Letter set A.

Preparation: Leave the letters on the blackboard. Do not rearrange.

Step 1. WHAT IS THE SOUND OF THE LETTER \_\_\_\_\_?  
(Point only if necessary).

---

Lesson 9. Review Game. Use Letter-set A.

Task: WHAT IS THE NAME AND THE SOUND OF THIS LETTER?

---

Lesson 10. Teaching Lesson. Use Item Program III: Word Sounding.  
Use letter groups shown below.

a d a                      i b u  
b u k u                    n a s i  
s a y a

Preparation: Print the letters in word-groups on the blackboard,  
spaced as they are shown above.

Step 1. WHAT IS THIS WORD? (Point to one "word".)

---

Lesson 11. Teaching Lesson. Use Item Program III: Word Sounding.

Preparation: Arrange word-set B on the blackboard.

Step 1. WHAT IS THIS WORD? (Point).

Note: Rearrange the cards after each round.

---

Lesson 12. Review Game. Use Word-sets A, B.

Task: WHAT IS THIS WORD?

---

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Lesson 13a, b, c, d. Teaching Lessons. Use Item Program IV:  
Sentence Reading.

Saya ada nasi. (I have rice.)	Who has rice?
Awak ada nasi. (You have rice.)	Who else has rice?
Bapa ada nasi. (Father has rice.)	
Bapa saya ada nasi. (My father has rice.)	Who else has rice?
Ibu ada nasi. (Mother has rice.)	What does mother have?
Ibu saya ada nasi. (My mother has rice.)	
Awak ada buku. (You have a book.)	Who has a book?
Abu ada buku. (Abu has a book.)	Who else has a book?
Fatimah ada buku. (Fatimah has a book.)	What does Fatimah have?

Preparation: Print the sentences on the blackboard three at a time.

When you finish Lesson 13c you will have printed the  
nine sentences you need for Lesson 13d.

Do not print the questions at the right.

Note: Use Step 3 only in Lesson 13d.

Step 1. CAN YOU READ THIS SENTENCE? (Point)

Note: Lesson 13a: Use the first three sentences only.

Lesson 13b: Use the second three sentences.

Lesson 13c: Use the third set of three sentences.

Lesson 13d: Use all nine sentences.

Lessons 14 to 64 are not included here. The following page  
reproduces Item Program III from the Malay version of the  
Teachers Guide.

Rancangan Perkara III Membunyikan Perkataan

Rancangan ini menerangkan cara yang perlu diikuti apabila seseorang murid disuruh membaca sesuatu perkataan setelah ia bolih membunyikan (apabila bunyi-bunyi huruf telah diketahui). Perkataan ini bolih dikemukakan dalam ayat atau satu-satu perkataan. Soalan yang biasa ialah APAKAH PERKATAAN INI?

Langkah 1: Langkah Ujian dan Pengajaran

- a. Soalkan
- b. Panggilkan murid yang tak ada kad hadiah. Jika ia tak faham, ulangkan soalan. Kemudian:
- c. Jika jawapannya betul, pujikan dan beri dia kad hadiah. Kemudian beralih kepada Langkah 3.  
Sekiranya jawapannya salah atau tidak menjawab, gunakan Cara A.

Cara A: Gunakan arahan (i) hingga (v) sehingga dia dapat memberikan perkataan itu. Kemudian pujikan dia dan beralih kepada Langkah yang lain.

- i) APAKAH PERKATAAN INI?
- ii) APAKAH BUNYI-BUNYI HURUF?
- iii) (Berikan dia tahu bunyi-bunyi yang dia belum menguasai.)  
SEKARANG, APAKAH PERKATAAN INI?
- iv) SEKALI LAGI, CUBA SEBUTKAN BUNYI-BUNYI HURUF.  
CEPAT SEDIKIT.
- v) SEKARANG, APAKAH PERKATAAN INI?

Apabila dia dapat memberikan jawapan yang betul dalam mana-mana satu arahan itu, jangan gunakan lagi arahan berikutnya. Pujikan dia dan beralih kepada langkah 2.

Jika sekiranya dia tidak dapat memberikan jawapan sehingga sampai arahan (v), sebutkan bunyi huruf-huruf untuknya, dan kemudian berkata, SEKARANG AWAK SEBUTKAN. Pujikan dia apabila dia dapat memberikan jawapan yang betul dan beralih kepada Langkah 2.

Langkah 2: Tindakbalas Darjah

- a. Cakapkan kepada semua murid-murid, SEKARANG AWAK SEMUA BUNYIKAN HURUF-HURUF, KEMUDIAN BERIKAN SAYA PERKATAAN ITU.
- b. Jika semua atau kebanyakan murid menjawab dengan betul, pujikan mereka dan ulangkan jawapan. Kemudian beralih kepada perkara yang berikutnya.

Jika kebanyakan atau semua tidak mendapat menjawab yang betul, berikan jawapan yang betul dan suruh semua murid-murid mengikut. Misalnya katakan AH, BUH, OO -- ABU. SEKARANG CUBA KATAKAN. Apabila jawapannya betul, pujikan mereka dan beralih kepada perkara yang berikut.

TAMAT

A MODEL FOR DERIVING  
PRIMARY EDUCATION  
LIFE-SKILLS OBJECTIVES:

A Proposed Pilot Study of Five  
Alternative Models in the Philippines

To be conducted by:

The INNOTECH Research Staff

In Cooperation with:

The Philippine Department of Education  
The Cebu City School District  
The Consolacion School District

23 April - 11 May 1973

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**S E C T I O N I :**

**INTRODUCTION AND SUMMARY**

## BACKGROUND

The South East Asian Ministers of Education Organization (SEAMEO) has assigned to the Regional Center for Educational Innovation and Technology (INNOTECH) the responsibility to develop a model for the derivation of "life-skills" objectives for primary education. "Life-skills" objectives are defined as the learning achievements which are the most important attainments of children who do not go beyond 4 or 5 years of primary school. Among the 8 SEAMEO countries, approximately one-half of our children are unable to complete primary education, and it is essential that their short contact with formal education be of most benefit to them and to the societies in which they live.\*

The Department of Education of the Republic of the Philippines has graciously consented to the conduct of an initial field study in the Cebu City area in support of INNOTECH's attempts to develop a workable model for the derivation of "life-skills" objectives. This paper summarizes the research design for review by Ministry and by the school administrations of Cebu City and Consolacion Districts. We fully recognize that this three-weeks research effort will be an imposition on the time and good will of the two school districts, but we hope that the results of this effort will be of benefit to the Philippines as well as to other nations in South East Asia.

## OVERVIEW OF RESEARCH DESIGN

In search of a feasible model for deriving life-skills objectives, the INNOTECH staff has identified five alternative approaches which vary from the most simple to the most complex. The five alternatives result 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 (a) simply to list types of objectives and behavioral examples or (b) 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?

The various contributions and judgments which are needed to provide the data to answer these questions cannot come from the INNOTECH staff; they must come from knowledgeable citizens of a country (or region thereof) who form the society for which primary education is to prepare children to live fruitful lives. The bulk of the work in the proposed field study, therefore, will have to be done by the citizens of Cebu City and Consolacion Districts. A "model" such as we are trying to develop can only be the vehicle for making systematic decisions about primary education objectives; content must be indiginous to those communities whose children are to benefit. For these reasons, the staff is proposing the organization of a number of committees, each of whom would be asked to assist the project in a variety of ways. A given committee member, however, would be asked to meet only one time\* for a period of two to three hours. The proposed makeup of the various committees and a proposed schedule of meetings are given on subsequent pages.

#### THE FIVE ALTERNATIVE MODELS

The five alternatives are outlined below as a series of steps, and proposed committees are designated for each appropriate step. In the pages which follow this Introduction, the proposed responsibilities, makeup and schedule of each committee are presented in a separate section.

<u>Alternative #1</u>	<u>Steps</u>
...	Generate lists of "the most important things that primary age children should learn." (Committee A).
...	Determine which primary objectives <u>can be or should be learned</u> in formal school as <u>opposed to the use of other community resources</u> for learning. (Committee E).

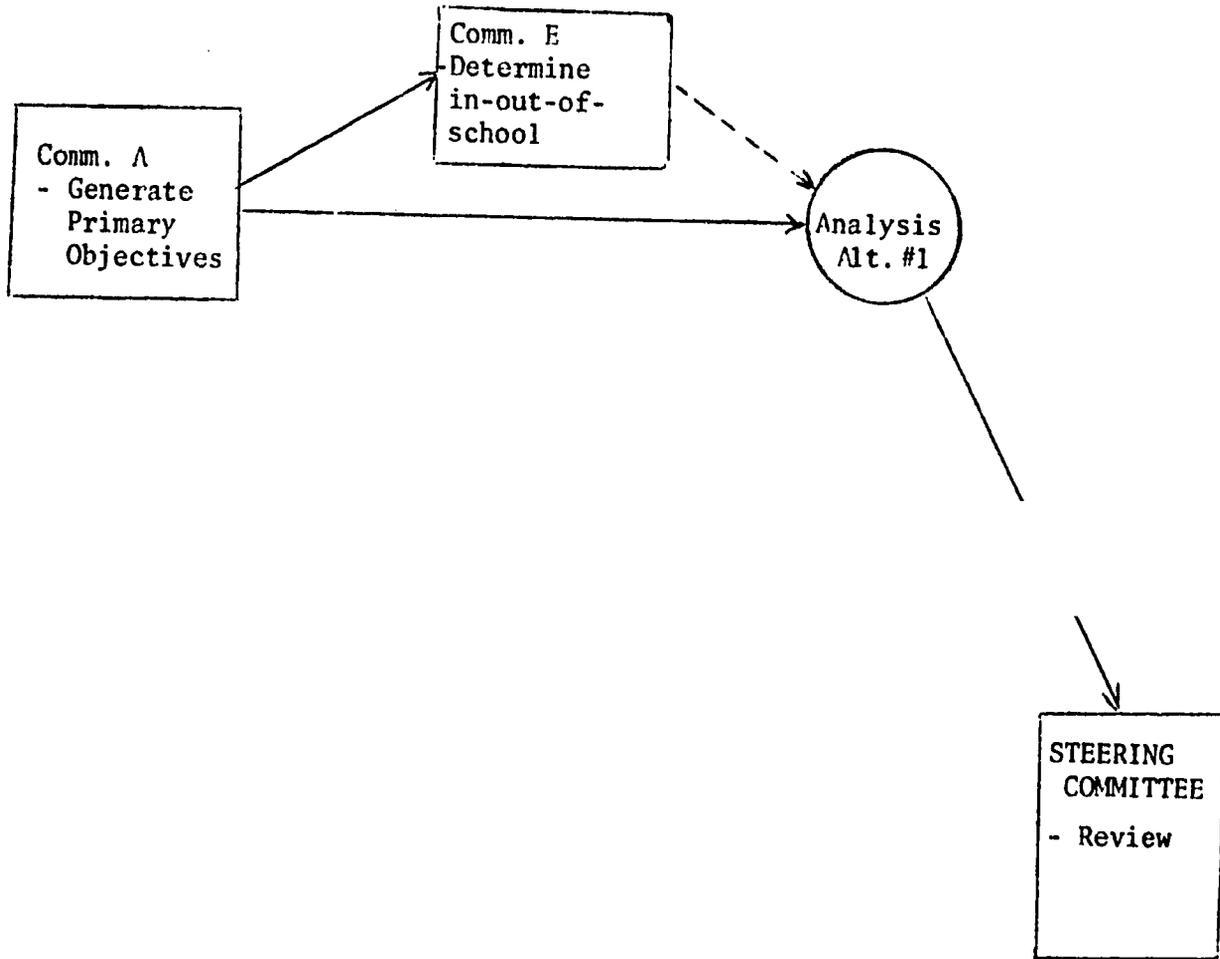
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\* Exceptions to the "one time meeting" proviso would be the Steering Committee (who would meet as it deems necessary) and three Select Committees (who would be asked to meet twice).

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)

Sequence of Committee Activities for Alternative #1



---

\* Analysis procedures are outlined later in this paper.

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)\*\*

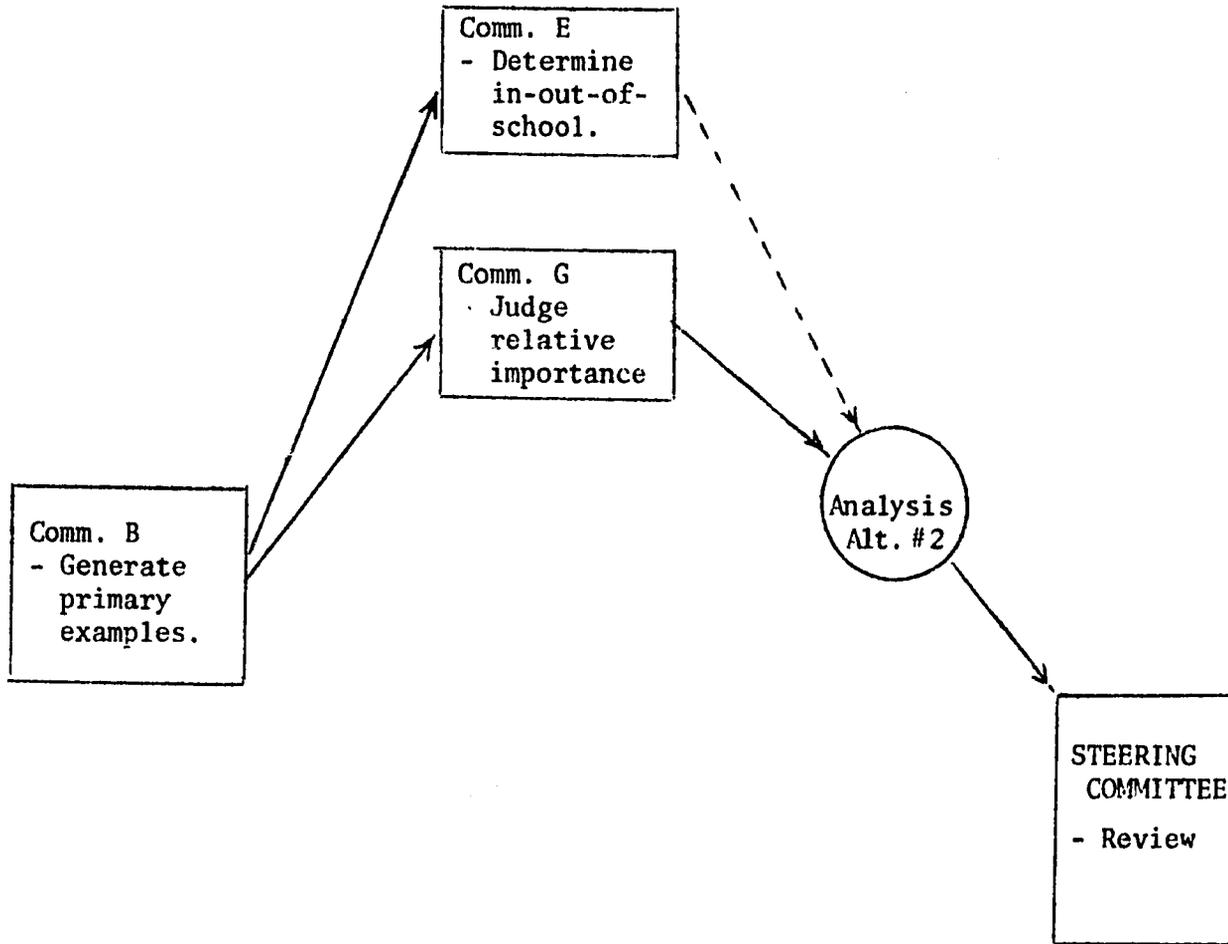
|Analysis: Compare results with those of other|  
|alternatives on the basis of (1) feasibility,|  
|(2) acceptability, (3) comprehensiveness and|  
|(4) validity. (Staff)|

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

---

\*\* Note that this step is identical to one in Alternative #1. Committee E, thus, makes this input to all alternatives in a single meeting. The multiple use of the inputs of the various committees is illustrated in the overall project diagram immediately following the present step-wise description of alternatives.

Sequence of Committee Activities for Alternative #2



Alternative #3

Steps

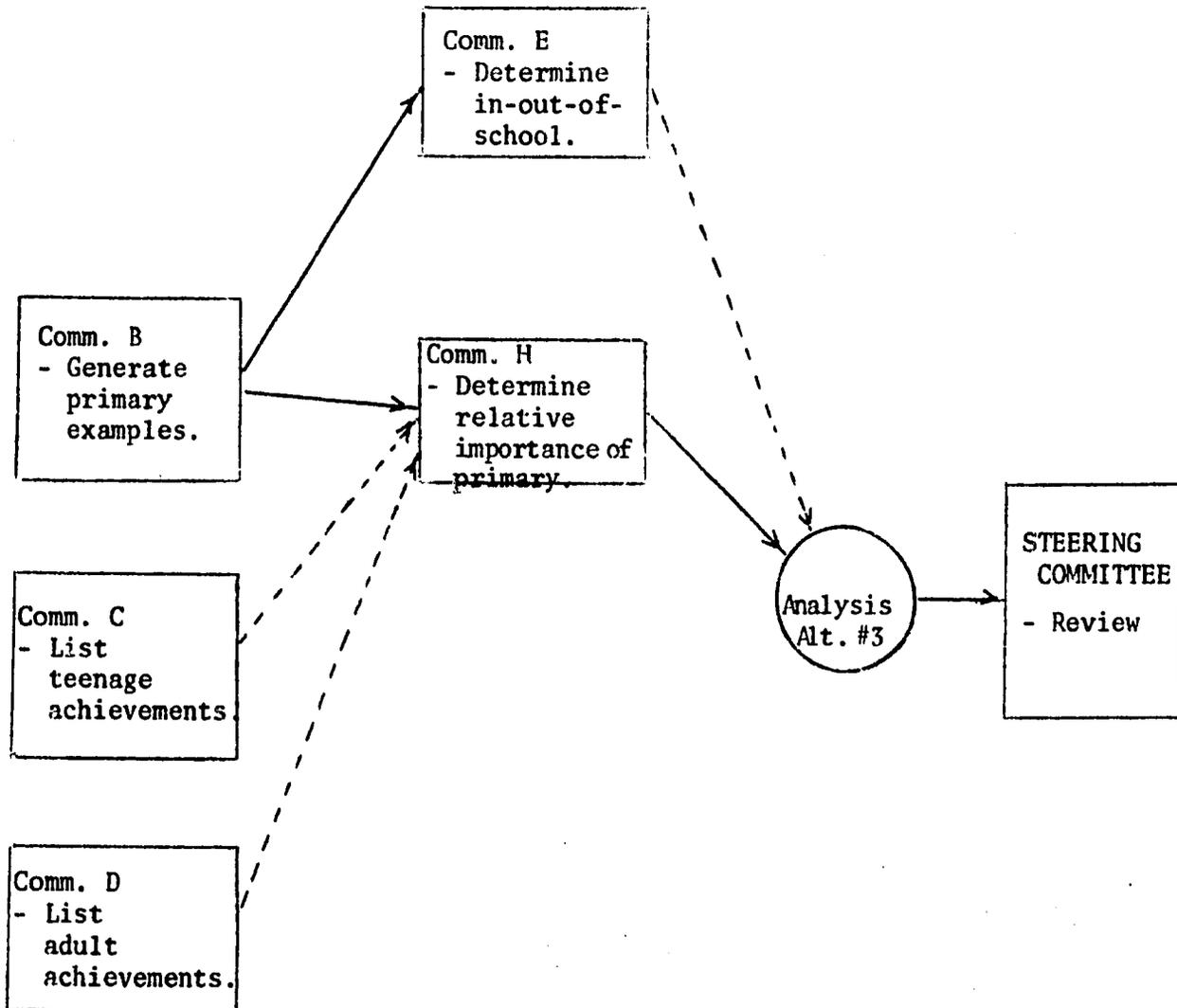
- ... Generate behavioral examples of primary education achievements for generalized categories of objectives previously prepared. (Committee B).
- ... Develop a list of desirable achievements for teenagers who have not gone beyond primary school. (Committee C).
- ... Develop a list of desirable achievements 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 of other alternatives on the basis of (1) feasibility, (2) acceptability, (3) comprehensiveness and (4) validity. (Staff).

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

Sequence of Committee Activities for Alternative #3

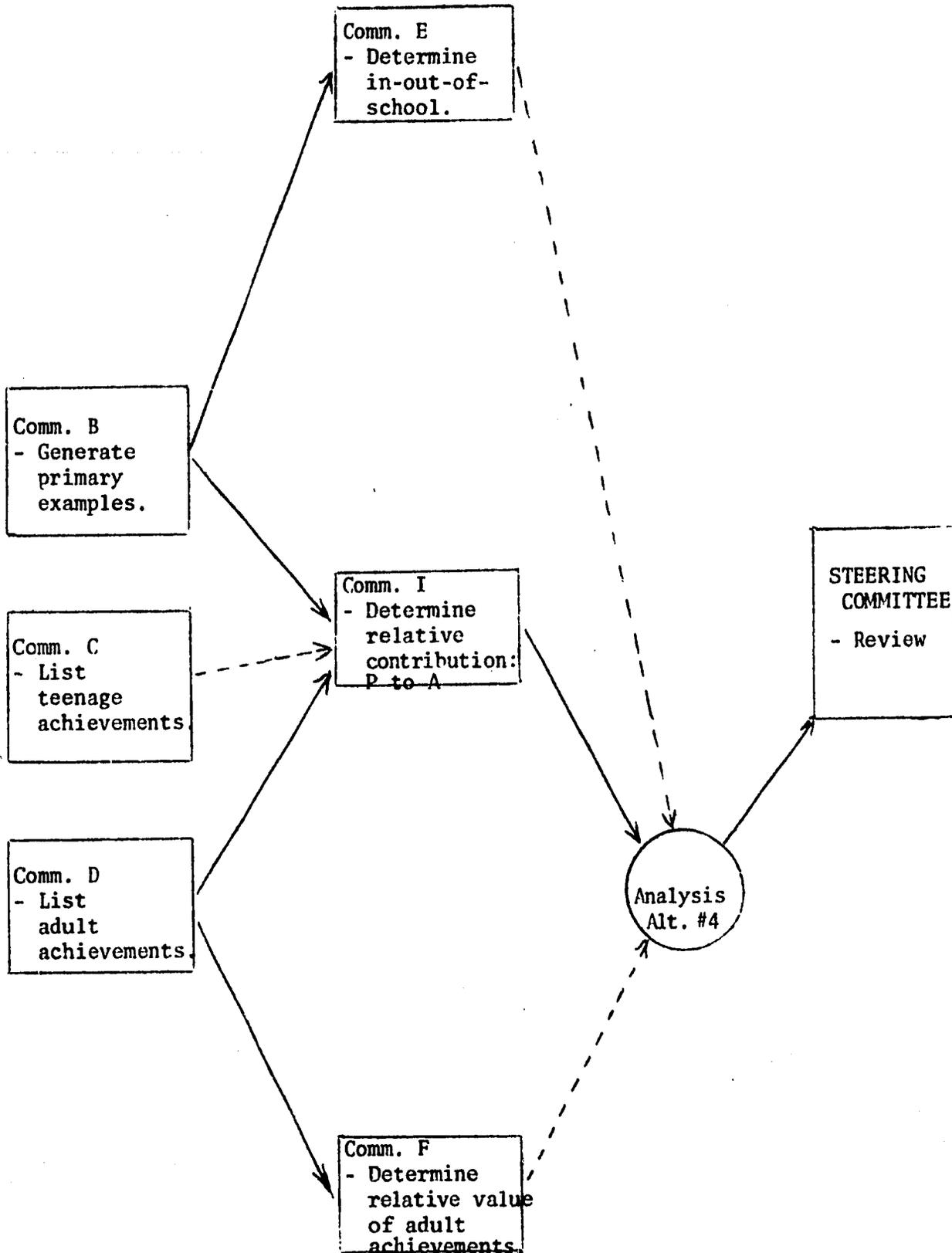


Alternative #4

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 reference only. (Committee I).
  - ... 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).

Sequence of Committee Activities for Alternative #4

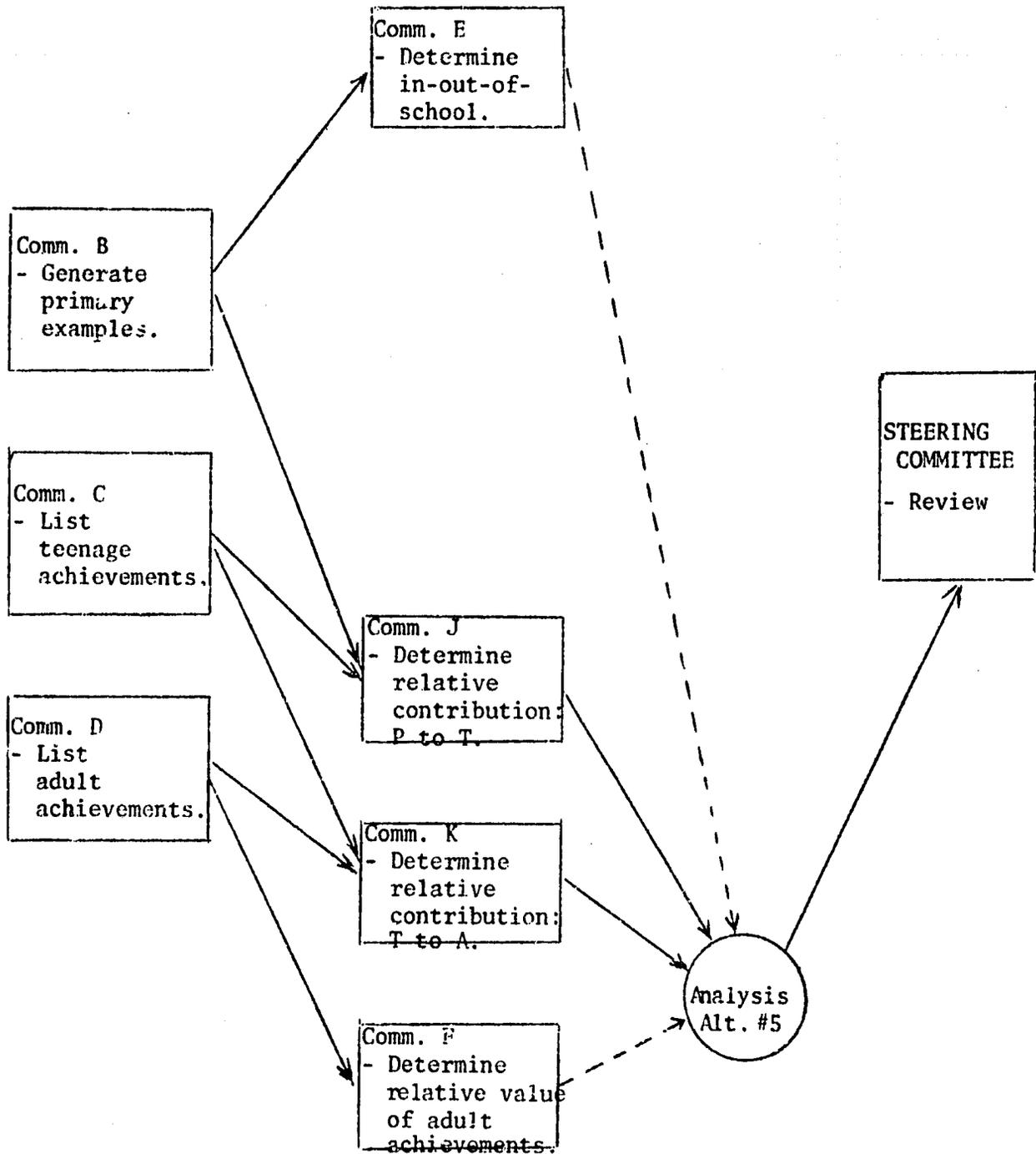


Alternative #5

Steps

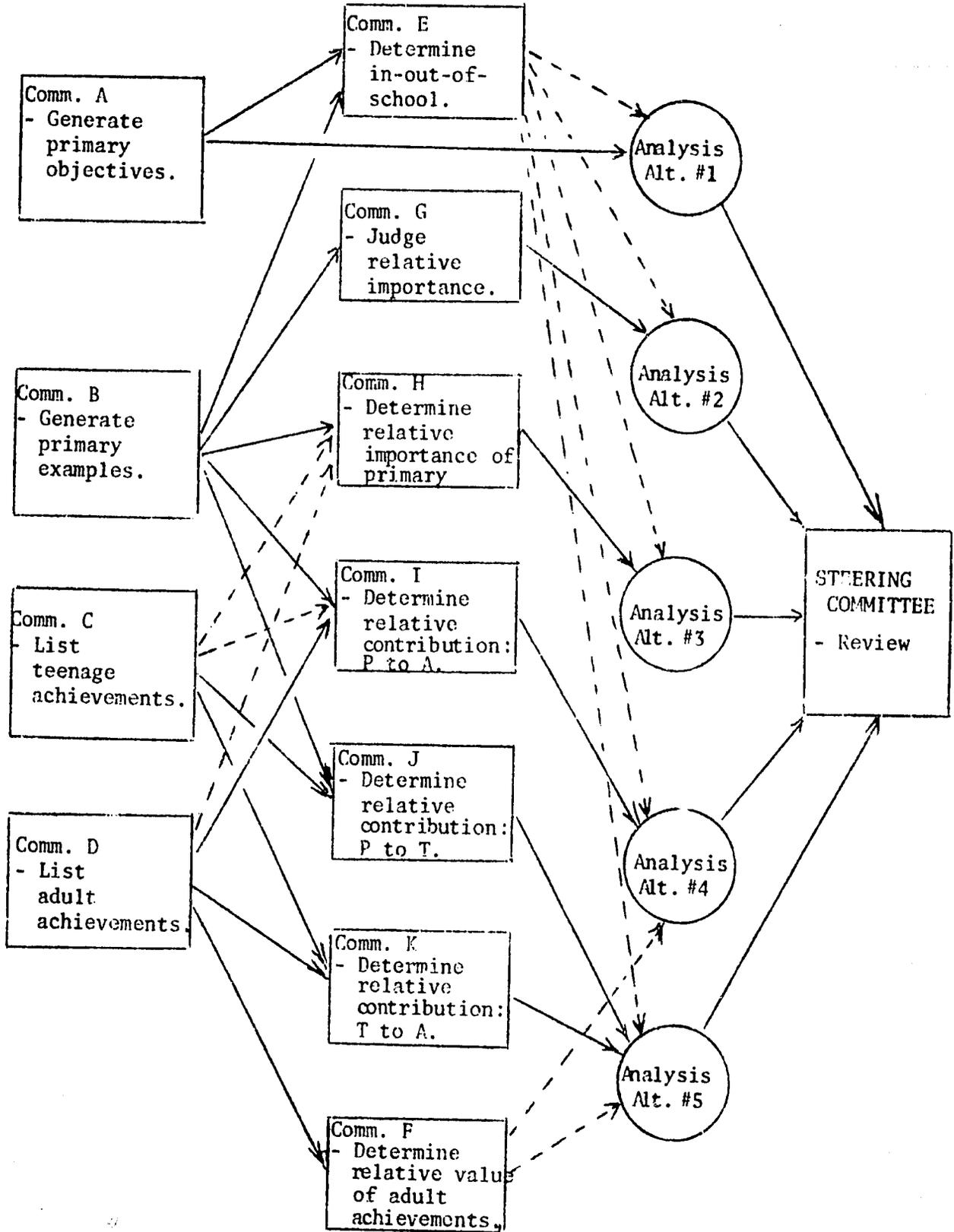
- ... Generate behavioral examples of primary education achievements for generalized categories of objectives previously prepared. (Committee B).
- ... Develop a list of desirable achievements for teenagers who have not gone beyond primary school. (Committee C).
- ... Develop a list of desirable achievements 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 achievements: 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).

Sequence of Committee Activities for Alternative #5



When the sequence of committee activities for all five alternatives are combined, the resulting diagram (next page) demonstrates how the product of any single committee would be used to support the tryout of a number of alternative models for deriving "life-skills" objectives.

SEQUENCE OF COMMITTEE ACTIVITIES  
FOR TOTAL FIELD STUDY



A NOTE ON RELATIVE IMPORTANCE,  
RELATIVE VALUE AND RELATIVE CONTRIBUTION

The word "relative" represents a significant concept throughout the study. It refers to our intention to quantify results on a ratio scale.

An example of "relative": Objective "X" is 4 times as important as objective "Y".

- or has 4 times the value
- or makes 4 times as much contribution

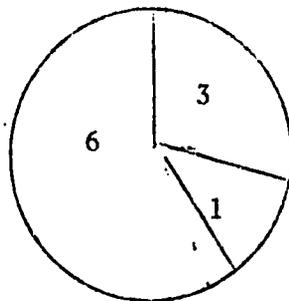
When there are limited resources to apply to education, the relative importance (value or contribution) provides a much more powerful means for making decisions about the allocation of resources than any other means. A ranking, for example, gives only a "more than" or a "less than" comparison - not how many times "more than" or "less than".

Such a ratio scale of relative importance also can be shown graphically.

For example, if the total value of primary education were due to only 3 objectives:

- Objective A = 6
- Objective B = 3
- Objective C = 1,

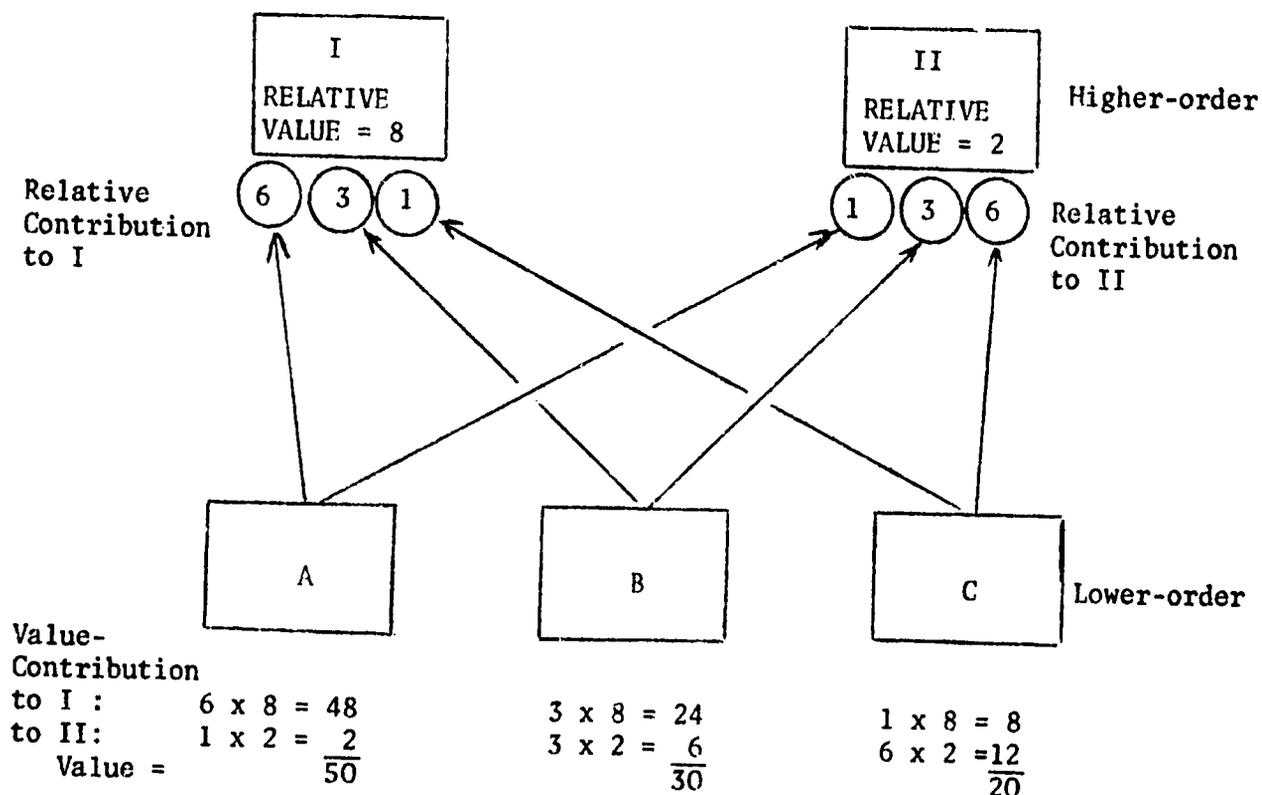
We could say that Objective A is twice as valuable as B and six times as valuable as C, and we could represent the total value thus:



"Relative importance", therefore, is the assignment of ratio-scaled numbers to a set of variables on the basis of their importance. We are using "relative importance" judgments in the present study for the work of Committees G and H in judging the relative importance of primary objectives.

"Relative value" is very similar to the judgment of importance and is used herein solely in judging the value of adult achievements (Committee F) in terms of the benefit to both the individual and society.

"Relative contribution" is used here in the application of the value-contribution method\* in determining the relative value of lower-order objectives by multiplying their relative contribution to higher-order objectives times the relative value of the higher-order objectives. As shown in the simplified example below, the value of a lower-order objective (e.g. "A") is the sum of its value contributions (e.g. value A = 50) which are calculated by the multiplication of relative contribution of the lower-order objective (e.g. A) times the relative value of a higher-order objective (e.g. I or II).



\* As developed by the Ministry of Education and Culture, Indonesia.

The work of Committees I, J and K will be devoted to judgments of relative contribution to either adult or teenage achievements.

Although our attempts to summarize here the several procedures which we propose to include in the study - may be more confusing than enlightening - each committee would be thoroughly briefed in the procedures which it will be asked to perform.

#### BASES OF ANALYSIS

As indicated in the previous outline of the alternative models, analysis would consist primarily of a comparison of alternatives on the basis of (1) feasibility, (2) acceptability, (3) comprehensiveness and (4) validity. The questions which should be answered by the analysis are:

(1) Feasibility:

Which alternative is the most easily administered?

- ... takes the least preparation?
- ... is the easiest to explain?
- ... requires fewest man-hours of committee time?
- ... is most generalizable to new locations/countries?

(2) Acceptability:

Which alternative is preferred by those who contribute to it?

- ... seems most reasonable to parents, teachers, administrators, etc.?
- ... best encompasses unique local circumstances?
- ... is most understandable when results are reported?
- ... would most likely be used in curriculum revision?

(3) Comprehensiveness:

Which alternative results in the greatest number of acceptable objectives/examples?

- ... requires least revision when results are reviewed by local authorities?

(4) Validity:

Which alternative gives the highest statistical prediction of the results of the other alternatives (part-whole correlation)?

(This analysis assumes that the majority of possible "life-skills" objectives will be developed by one or the other of the five alternatives. The single alternative which results in a higher proportion of those developed by the total project (the highest part-whole correlation) is, therefore, assumed to be the most valid.)

COORDINATION OF PROJECT ACTIVITIES

It is proposed that a Steering Committee of six persons (from Cebu City and Consolacion Districts) be set up to provide overall coordination of the field work. Because of the many details involved in selecting committee members and scheduling meeting times and locations, it is also suggested that the Steering Committee appoint an adjunct staff to help it (and the INNOTECH staff) during the three-week study which is proposed for the period 23 April - 11 May.

Dr. Aurelio A. Tiro, currently a senior member of the INNOTECH professional staff, would arrive in Cebu City on 15 April, one week in advance of other staff members. He would work with the administrations of the two districts in establishing the Steering Committee, adjunct staff, office space and facilities. The 16th and 17th of May probably should also be used to schedule meetings of Sub-committees A<sub>1</sub> and A<sub>2</sub> for 25 and 24 April respectively because the remainder of the week of the 16th is Holy Week. Dr. Tiro also would stay in Cebu City for the full week of the 23rd, but demands of his other responsibilities will force him to return to INNOTECH.\*

Three members of the INNOTECH staff would arrive in Cebu City on 23 April. They are Anwar Jasin (Project Leader), Helen Manampan (Project Assistant) and Daryl Nichols (Head, Professional Staff, INNOTECH). It is hoped that a briefing of the Steering Committee can be held on Tuesday Morning, 24 April.

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\* Dr. Tiro is completing a comparative study of the published objectives of primary education of the eight SEAMEO countries.

This field staff would overlap one week with Dr. Tirc and would remain for the remainder of the field work. They would bring with them stencils of all forms and instructions to be used throughout the study. It would be necessary to run off these stencils (Gestetner) in Cebu City as a means of saving the cost of shipping the printed forms from INNOTECH.

The INNOTECH staff would be responsible for the conduct of all committee meetings and analyses, but would be grateful for the assistance of the Cebu City adjunct staff whenever possible.

The table on the next page gives a proposed schedule for the various committee meetings, beginning with a briefing of the Steering Committee and ending with a debriefing and review by the Steering Committee.

The proposed responsibilities and makeup of all committees are presented in the Section II.

PROPOSED COMMITTEE MEETING SCHEDULE

DATE	DAY	TIME	COMMITTEE		
			DESIGNATION	Number Members	Meeting Facilities
APRIL 24	TUESDAY	AM	STEERING COMMITTEE	6	Single Room
"	"	3-5 PM	A <sub>2</sub>	39	Single Room - Cebu City
25	WEDNESDAY	3-5 PM	A <sub>1</sub>	39	Single Room - Consolacion
26	Thursday	3-5 PM	B <sub>1</sub>	32	Single Room - Cebu City
"	"	3-5 PM	B <sub>2</sub>	32	Single Room - Consolacion
27	FRIDAY	3-5 PM	C	32	Single Room
30	MONDAY	3-5 PM	D	32	Single Room
MAY 1	TUESDAY	3-6 PM	SELECT COMM. B	16	Four Rooms
2	WEDNESDAY	3-5 <sup>30</sup> PM	SELECT COMM. C	16	Four Rooms
"	"	3-5 <sup>30</sup> PM	SELECT COMM. D <sub>1</sub>	8	SAME LOCATION- SEPARATE ROOMS
"	"	3-5 <sup>30</sup> PM	SELECT COMM. D <sub>2</sub>	8	
3	THURSDAY	3-6 PM	E	60	Single Room
"	"	3-5 <sup>30</sup> PM	F	32	Two Rooms
4	FRIDAY	3-5 <sup>30</sup> PM	G	24	Single Room
"	"	3-5 <sup>30</sup> PM	H	24	Single Room
7	MONDAY	3-6 PM	I	64	Auditorium plus 8 rooms
8	TUESDAY	3-6 PM	J	64	Auditorium plus 8 rooms
9	WEDNESDAY	3-6 PM	K	64	Auditorium plus 8 rooms
11	FRIDAY	-	STEERING COMMITTEE (REVIEW)	6	Single Room

**S E C T I O N I I :**

**PROPOSED RESPONSIBILITIES AND MAKEUP OF COMMITTEES**

STEERING COMMITTEE

Proposed Responsibilities

1. Provide overall coordination of the project.
2. Select and schedule meetings of the other committees (as described on the pages to follow).
3. Select and provide 4-5 "adjunct staff members" to assist the INNOTECH staff in its field work in Cebu City (23 April - 11 May 1973).
4. Provide office space, 2 typists and a calculating machine.
5. Review initial results (11 May 1973).
6. Review draft of final report (during June 1973).

Proposed Makeup of Steering Committee

We propose a Steering Committee of 6 members, as follows:

School administrator (Cebu City)  
School administrator (Consolacion District)  
Primary Curriculum Expert (Cebu City)  
Primary Curriculum Expert (Consolacion District)  
Civil administrator (Cebu City)  
Civil administrator (Consolacion District)

A. COMMITTEE FOR DEVELOPMENT OF LIFE SKILLS OBJECTIVES  
(Sub-committees A<sub>1</sub> and A<sub>2</sub>)

Proposed Responsibilities

1. In general, generate lists of "the most important things that primary age children should learn" (life-skills objectives).
2. Specifically, meet for approximately two hours to provide answers to the following question:

"If you knew that a child would have to stop school after 4-5 years, what are the most important things he should learn?"

Forms will be provided to committee members upon which each person will be requested to write as many as 40 "things a child should learn" and to give a specific example for each thing listed.

Committee members will be chosen to represent different sectors in society ("areas of expertise"). Each will be asked to prepare the list of life-skills objectives in relation to his own area of expertise.

Proposed Makeup of Committee

Sub-committee A<sub>1</sub> (39 persons) would be representative of the Consolacion District, and would hold its meeting in that district.

Sub-committee A<sub>2</sub> (39 persons) would represent Cebu City and would hold its meeting there.

Each Sub-committee essentially is a combination of three "sets" of members, each set being associated with a separate primary school. Teachers in a single set, for example, would come from a single primary school, parents would have children enrolled in the same school and community members would come from the general area served by that school. Schools, therefore, would become the basis for selecting committee members. The proposed makeup of the committee is given below, but the Steering Committee can be fairly flexible when it makes its selection of committee members.\*

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\* If one school is too small to provide the needed committee membership, two schools can be combined for sampling purposes as one.

Committee Membership	Sub-Committee A <sub>1</sub>			Sub-Committee A <sub>2</sub>		
	School A	School B	School C	School D	School E	School F
Mathematics teacher	1	1	1	1	1	1
Science teacher	1	1	1	1	1	1
Social Studies teacher	1	1	1	1	1	1
Language teacher	1	1	1	1	1	1
Art/Music teacher	1	1	1	1	1	1
School Counselor/administrator	1	1	1	1	1	1
Parent	1	1	1	1	1	1
Businessman	1	1	1	1	1	1
Health Worker or Doctor	1	1	1	1	1	1
Religious leader	1	1	1	1	1	1
Representative of culture or arts	1	1	1	1	1	1
Representative of a typical vocation in school area	1	1	1	1	1	1
TOTALS	13	13	13	13	13	13
Sub-Committee A <sub>1</sub> =			39	Sub-Committee A <sub>2</sub> =		39
TOTAL Committee =						78

In the selection of committees, it is suggested that conscious effort be given to insure representation of both sexes and of appropriate religious.

Proposed Meeting Time

Sub-Committee A<sub>1</sub> : Wednesday, 25 April, 3-5 P.M.

Sub-Committee A<sub>2</sub> : Tuesday, 24 April, 3-5 P.M.

Additional Note

Members serving on this Committee should not serve on other committees. This restriction is suggested in order to avoid "overworking" some persons and to insure that the five alternatives which are being compared in the project are done independently.

B. COMMITTEE TO DEVELOP SPECIFIC EXAMPLES  
OF PRIMARY ACHIEVEMENTS

(Sub-committee B<sub>1</sub> and B<sub>2</sub> and Select Committee B<sub>3</sub>)

Proposed Responsibilities

In general, generate examples of primary achievements for generalized categories of objectives (which will be provided by INNOTECH). The staff has developed a set of some 80 categories (e.g. "calculations", "health", "relations to others", etc.) and the Committee will be asked to flesh out these categories with specific examples of desirable achievements for children who have to stop school after 4-5 years.

Specifically, Sub-committee B<sub>1</sub> (representing Cebu City) would meet separately from Sub-committee B<sub>2</sub> (representing Consolacion). Members would work individually on those categories of objectives with which they are most familiar (e.g. a "head of household" would be most concerned with categories concerning the family). Each person would be asked to give 10 examples for each category assigned him, and he would be assigned approximately 10 categories (for a total of some 100 examples by each person).

For example, in the category of health, he might give specific examples of primary achievements as follows:

- ... bathes daily
- ... looks both ways before crossing busy street
- ... when sick with contagious disease, avoids contact with others
- ... etc.

Every set of ten categories would be packaged so that they are appropriate to the area of expertise of each respondent. For example, it would be appropriate to include some objectives concerning the use of mathematics in the sets which would be responded to by mathematics teachers, bankers, tradesmen, carpenters, etc. It would not be important, however, to include all mathematics objectives in the sets intended for religious leaders, farmers, parents, health workers, etc., although some mathematics objectives may be appropriate for these respondents and would be included. The aim would be to match (as closely as possible) the sets of generalized categories of objectives with the primary area of expertise of respondents.

In addition to the unique set of ten generalized categories of objectives provided each respondent, a complete listing of all categories (approximately 80) should also be given to each person. This procedure would serve two purposes: (1) provide each respondent a better idea of how his contribution can fit into the study as a whole and (2) give a basis for contributing new ideas to the list of generalized categories of objectives. All respondents would be asked to review the entire list of categories and to suggest new ones which INNOTECH may have overlooked, and to give one or two examples to go with each new category suggested.

The data thus collected will result in as many as 80 examples for each generalized category of objectives. At this point, the work of Sub-committees B<sub>1</sub> and B<sub>2</sub> would be finished.

However, the need is to achieve some 80 "life-skills" objectives (each with only 20 examples) for use in several further applications in the field study. Thus, these examples would be typed on 3 x 5 cards and given a preliminary sorting (by similarity of example) by the INNOTECH field staff and the five adjunct staff members from Cebu City. This work would be in preparation for the work of the Select Committee which would be drawn from among the total membership of Committee B.

The meeting of Select Committee B should serve two purposes:

- (1) Derive the 20 "best" examples for each generalized statement of an objective. This procedure would be necessary to reduce overlaps, to increase clarity and to reduce the quantity of examples to a manageable number for later use. (We may find during this procedure that 15, or perhaps 25, is a better number).
- (2) Indicate the relative importance of each example (within an objective) as something to be learned by a child who must stop after 4-5 years of primary education.

On the Select Committee, we could attempt to insure that two persons were present with the appropriate "areas of expertise" for each set of 10 general categories of objectives (see previous discussion). Working in pairs, the two purposes above should be achieved.

Proposed Makeup of Committee

	<u>Sub-Committee B<sub>1</sub></u> <u>(Cebu City)</u>	<u>Sub-Committee B<sub>2</sub></u> <u>(Consolacion)</u>
Mathematics Teacher	2	2
Science Teacher	2	2
Social Studies Teacher	2	2
Language Teacher	2	2
Art/Music Teacher	2	2
School Counselor/Administrator	2	2
Parent	6	6
Businessman	2	2
Health Worker	2	2
Representative of Culture/Arts	2	2
Civil Administrator	4	4
Industrial Manager	2	-
Agricultural Extension Worker	-	2
Religious leader	2	2
	<hr/>	<hr/>
TOTALS	32	32

GRAND TOTAL = 64

Select Committee B (chosen from members of the full Committee)

	<u>Cebu City</u>	<u>Consolacion</u>
Mathematics Teacher	1	
Science Teacher		1
Social Studies Teacher	1	
Language Teacher		1
Art/Music Teacher	1	
School Counselor/Administrator		1
Parent	1	1
Businessman	1	
Health Worker		1
Representative of Culture/Arts	1	
Civil Administrator	1	1
Industrial Manager	1	
Agricultural Extension Worker		1
Religious leader		1
	<hr/>	<hr/>
TOTALS	8	8

GRAND TOTAL = 16

Proposed Times of Meetings

Sub-Committee B<sub>1</sub> (to be held in Cebu City):

Thursday, 26 April, 3-5 PM

Sub-Committee B<sub>2</sub> (to be held in Consolacion District):

Thursday, 26 April, 3-5 PM

Select Committee B:

Tuesday, 1 May, 3-6 PM

C. COMMITTEE FOR DEVELOPING OF A LIST OF DESIRABLE  
ACHIEVEMENTS FOR TEENAGERS WHO HAVE  
NOT GONE BEYOND PRIMARY SCHOOL

(Committee C plus Select Committee C)

Proposed Responsibilities

In general, generate examples of teenage achievements for generalized types of situations (which will be provided by INNOTECH). The staff has developed a set of some 40 categories (e.g. "home", "health", "relations to others", etc.) and the Committee will be asked to flesh out these situations with specific examples of desirable achievements for teenagers who have not gone beyond primary school.

Specifically, Committee C members would initially work individually on those types of situations with which they are most familiar (e.g. a "head of household" would be most concerned with situations concerning the family life). Each person would be asked to give 10 examples for each situation assigned him, and he would be assigned approximately 10 situations (for a total of some 100 examples by each person). Every set of ten situations would be packaged so that they are appropriate to the area of expertise of each respondent. For example, it would be appropriate to include some situations concerning "work habits" in the sets which would be responded to by bankers, tradesmen, carpenters, etc. It would be less important however, to include "work habits" in the sets intended for religious leaders, cultural representatives, health workers, etc. The aim would be to match (as closely as possible) the types of situations, with the primary area of expertise of respondents.

In addition to the unique set of ten types of situations provided each respondent, a complete listing of all situations (approximately 40) should also be given to each person. This procedure would serve two purposes: (1) provide each respondent a better idea of how his contributions can fit into the study as a whole and (2) give a basis for contributing new ideas to the list of situations (which INNOTECH may have overlooked). All respondents would be asked to review the entire list and to suggest new situations and to give one or two examples to go with each new situation suggested.

The data thus collected will result in as many as 80 examples for each types of teenage situation. At this point, the work of Committee C would be finished.

However, the need is to achieve some 40 general teenage achievements (each with some 20 examples) for use in several further applications in the field study. Thus, these examples would be typed on 3 x 5 cards and given a preliminary sorting (by similarity of example) by the INNOTECH field staff and the five adjunct staff members from Cebu City. This work would be in preparation for the work of the Select Committee which would be drawn from among the total membership of Committee C.

The meeting of Select Committee C should serve the following purpose:

Derive the 20 "best" examples of achievements for each teenage situation. This procedure would be necessary to reduce overlaps, to increase clarity and to reduce the quantity of examples to a manageable number for later use. (We may find during this procedure that 15, or perhaps 25, is a better number.)

Proposed Makeup of Committee

Committee C:

	<u>Cebu City</u>	<u>Consolacion</u>
Youth Leader	2	2
Guidance Counselor	1	1
Technical Trainer in Health	1	1
Technical Trainer in Business	1	1
Technical Trainer in Industry	1	-
Technical Trainer in Agriculture	-	1
Technical Trainer in Home Economics	1	1
Health Worker	1	1
Civil Administrator	1	1
Religious Leader	1	1
Parent of Teenager	1	1
Business Man	1	1
Agricultural Extension Rep.	-	2
Industrial Manager	1	-
Rep. of Art/Culture	1	1
Labor Union Official	1	-
Teenager	1	1
	<hr/>	<hr/>
TOTALS	16	16

TOTAL Committee = 32

Select Committee C:

	<u>Cebu City</u>	<u>Consolacion</u>
Parent	1	1
Religious Leader	1	-
Youth Leader	1	1
Guidance Counselor	1	1
Health Worker	-	1
Agricultural Extension Rep.	-	1
Industrial Manager	1	-
Civil Administrator	1	1
Businessman	1	-
Home Economics	-	1
Teenager	1	1
	<u>—</u>	<u>—</u>
TOTALS	8	8

TOTAL Sub-Committee = 16

Proposed Meeting Time

Committee C: Friday, 27 April, 3-5 P.M.

Sub-Committee C: Wednesday, 2 May, 3-5<sup>30</sup> P.M.

D. COMMITTEE FOR DEVELOPING A LIST OF  
DESIRABLE ACHIEVEMENTS FOR ADULTS  
WHO HAVE NOT GONE BEYOND PRIMARY SCHOOL

(Sub-committees D<sub>1</sub> & D<sub>2</sub> plus Select Committees D<sub>1</sub> & D<sub>2</sub>)

Proposed Responsibilities

In general, generate examples of adult achievements for generalized types of situations (which will be provided by INNOTECH). The staff has developed a set of some 40 categories (e.g. "home", "health", "relations to others", etc.) and the Committee will be asked to flesh out these situations with specific examples of desirable achievements for adults who have not gone beyond primary school.

Specifically, Committee D members would initially work individually on those types of situations with which they are most familiar (e.g. a "head of household" would be most concerned with situations concerning the family life). Each person would be asked to give 10 examples for each situation assigned him, and he would be assigned approximately 10 situations (for a total of some 100 examples by each person). Every set of ten situations would be packaged so that they are appropriate to the area of expertise of each respondent. For example, it would be appropriate to include some situations concerning "work habits" in the sets which would be responded to by bankers, tradesmen, carpenters, etc. It would be less important however, to include "work habits" in the sets intended for religious leaders, cultural representatives, health workers, etc. The aim would be to match (as closely as possible) the types of situations, with the primary area of expertise of respondents.

In addition to the unique set of ten types of situations provided each respondent, a complete listing of all situations (approximately 40) should also be given to each person. This procedure would serve two purposes: (1) provide each respondent a better idea of how his contributions can fit into the study as a whole and (2) give a basis for contributing new ideas to the list of situations (which INNOTECH may have overlooked). All respondents would be asked to review the entire list and to suggest new situations and to give one or two examples to go with each new situations suggested.

Sub-committee D<sub>1</sub> would devote itself primarily to giving examples of male achievements, whereas Sub-committee D<sub>2</sub> would be concerned with female achievements.

The data thus collected will result in as many as 80 examples for each type of adult situations. At this point, the work of Sub-committees D<sub>1</sub> and D<sub>2</sub> would be finished.

However, the need is to achieve some 40 general adult achievements (each with some 20 examples for each sex) for use in several further applications in the field study. Thus, these examples would be typed on 3 x 5 cards and given a preliminary sorting (by similarity of example) by the INNOTECH field staff and the five adjunct staff members from Cebu City. This work would be in preparation for the work of the Select Committees which would be drawn from among the total membership of Committee D.

The meeting of Select Committees D<sub>1</sub> and D<sub>2</sub> should serve the following purpose:

Derive the 20 "best" examples of achievements for each adult situation for both sexes. This procedure would be necessary to reduce overlaps, to increase clarity and to reduce the quantity of examples to a manageable number for later use. (We may find during this procedure that 15, or perhaps 25, is a better number.)

Proposed Makeup of Committee

	<u>Sub-Committee D<sub>1</sub></u> (male)		<u>Sub-Committee D<sub>2</sub></u> (female)	
	<u>Cebu City</u>	<u>Consolacion</u>	<u>Cebu City</u>	<u>Consolacion</u>
Civil Administrator	1	1	-	-
Health Worker	-	1	1	1
Home Economics Specialist	-	-	1	1
Agricultural Extension Rep.	-	2	-	-
Family Guidance Counselor	1	-	1	-
Labor Union Official	1	-	1	-
Businessman (or woman)	1	1	1	1
Industrial Manager	1	-	-	-
Religious Leader	-	1	-	1
Representative of Art/Culture	1	-	-	1
Head of Household	1	1	-	-
Wife/Mother	-	-	2	2
Social Worker	1	1	1	1
	-	-	-	-
	8	8	8	8

TOTAL = 32

	<u>Select Committee D<sub>1</sub></u>		<u>Select Committee D<sub>2</sub></u>	
	<u>Cebu City</u>	<u>Consolacion</u>	<u>Cebu City</u>	<u>Consolacion</u>
Civil Administrator	1	-	-	-
Health Worker	-	1	1	-
Home Economics Specialist	-	-	-	1
Agricultural Extension Rep.	-	1	-	-
Family Guidance Counselor	1	-	-	1
Labor Union Official	1	-	-	-
Businessman (or woman)	-	1	1	-
Industrial Manager	1	-	-	-
Head of Household	-	1	-	-
Wife/Mother	-	-	1	1
Social Worker	-	-	1	1
	-	-	-	-
TOTALS	4	4	4	4

Total Select Committee D<sub>1</sub> = 8      Select Committee D<sub>2</sub> = 8

Proposed Time of Meetings

Joint Meeting of Sub-committees D<sub>1</sub> & D<sub>2</sub>:

Monday, 30 April, 3-5 P.M.

Meetings of Select Committees D<sub>1</sub> & D<sub>2</sub> (same location but  
separate rooms):

Wednesday, 2 May, 3-5<sup>30</sup> P.M.

E. COMMITTEE TO DETERMINE WHICH  
PRIMARY EDUCATION OBJECTIVES CAN BE  
OR SHOULD BE LEARNED IN FORMAL SCHOOL  
AS OPPOSED TO THE USE OF OTHER COMMUNITY  
RESOURCES FOR LEARNING

Proposed Responsibilities

In general, examine lists of objectives and examples of achievements of primary age children and judge which among them can be/or/should be learned in school. This effort is an attempt to "pare down" primary education objectives to absolute essentials -- the "life-skills" objectives which are the most important learning achievements of primary education.

Specifically, two lists of primary objectives would be combined and made available to the Committee. The first list is that developed by Committee A, and the second results from the work of Select Committee B. Respondents would be asked to examine each achievement and to rate it on the following scale:

- 5 = should be learned entirely in school
- 4 = about 75% of the achievement should be learned in school
- 3 = about 50% of the achievement should be learned in school
- 2 = about 25% of the achievement should be learned in school
- 1 = need not be learned in school
- 0 = should not be learned in school

These ratings would be done individually by respondents on a given set of objectives/achievements which are within their "area of expertise." After each judgment is made, respondents also would be asked to indicate what aspects of each achievement, if any, can be learned outside of school and to explain why (if necessary).

At this point we should expect the combination of the two lists to have provided some 80 categories of objectives each of which having some 25 examples of achievements -- a total of approximately 2,000 examples of achievements in all. Each respondent, however, would be asked to review only 100 achievements in his/her area of expertise. Thus, 20 respondents would be able to review the complete set. For the purposes of reliability, however, it would be necessary to obtain three reviews of each achievement, resulting in a total of 60 respondents.

Proposed Makeup of Committee

	<u>Cebu City</u>	<u>Consolacion</u>	<u>University or Teachers Training College</u>
Primary Mathematics Teacher	3	3	
Primary Science Teacher	3	3	
Primary Social Studies Teacher	3	3	
Primary Language Teacher	3	3	
Primary Art/Music Teacher	1	1	
Primary School Counselor	2	2	
Parent of Primary Student	2	2	
Health Worker	1	1	
Agricultural Extension Rep.	-	2	
Vocational Training Specialist	2	-	
Home Economics Specialist	1	1	
Family Guidance Specialist	1	1	
General Curriculum Specialist	2	2	2
Instructional Methods Specialist	-	-	2
Non-formal/Community Educator	2	2	2
Religious Leader	-	1	
Sports Leader	1	-	
	<hr/>	<hr/>	<hr/>
TOTALS	27	27	6

TOTAL Committee = 60

Proposed Time of Meeting

Committee E: Thursday, 3 May, 3-6 P.M.

F. COMMITTEE TO DETERMINE RELATIVE VALUE  
OF ADULT ACHIEVEMENTS

(Sub-Committees F<sub>1</sub> and F<sub>2</sub>)

Proposed Responsibilities

In general, Committee members would be given a set of approximately 40 descriptions of adult achievements. These descriptions have resulted from the work of Committee D and represent that committee's estimation of desirable achievements of adults who have not themselves gone beyond formal primary school. The main responsibility of the present Committee (F) would be to examine these 40 achievements and to judge the relative value of each one to both the individual and to the society in which he or she lives.

Specifically, the overall committee would be split into two sub-committees (F<sub>1</sub> & F<sub>2</sub>). Sub-committee F<sub>1</sub> would be concerned with these 40 achievements as they relate to the activities of women. Sub-committee F<sub>2</sub> would be concerned with the achievements of men.

As an initial step, each committee member would individually rate the achievements on a 1-5 scale ("5" indicating that an achievement is of high value to society and the individual). The field staff would then combine the scores on each adult achievement given by all members of a sub-committee. The staff also would prepare a ranking of achievements derived from the combined scores.

The full sub-committee would then meet to determine final relative values through discussion. The ranking previously done would be used simply as an aid to the discussion, since the ranking would represent, to some degree, the consensus of the total group.

How would judgments of relative value be made? Sub-committees would review their ranked list of adult achievements and assign a "10" to those which they considered to have the greatest value. They would then examine the remaining adult achievements and judge the value of each in relation to those "high-value achievements" which had previously been assigned a "10". If, for example, a given achievement was judged to have about one-half the value of the "high-value achievements", it would be assigned a "5" (one-half of the "10" previously assigned to the "high-value achievements".) In this way, a sub-committee would make these judgments for all 40 adult achievements. The result would be a separate set of values for women (Sub-committee F<sub>1</sub>) and for men (Sub-committee F<sub>2</sub>).

Proposed Makeup of Committee

Total number of members would be 32, both Sub-committees having 16 members.

Sub-committee F<sub>1</sub> (majority of members would be women):

	<u>Cebu City</u>	<u>Consolacion</u>
Wife/Mother	1	1
Health Worker	1	1
Religious Representative	1	1
Civil Administrator	1	1
Culture/Arts Representative	1	1
Business woman	1	1
Vocational Counselor	1	1
Community Welfare Rep.	1	1
	—	—
TOTALS	8	8

GRAND TOTAL = 16

Sub-committee F<sub>2</sub>:

	<u>Cebu City</u>	<u>Consolacion</u>
Head of Household	1	1
Health Worker	1	1
Religious Representative	1	1
Civil Administrator	1	1
Culture/Arts Representative	1	1
Businessman	1	1
Industrial Manager	1	-
Agricultural Extension Rep.	-	1
Community Welfare Rep.	1	1
	—	—
TOTALS	8	8

GRAND TOTAL = 16

Proposed Meeting Time

Both sub-committee meetings would be held in the same location to permit a general introduction and discussion of the total Committee before separating into the two sub-committees. The proposed meeting time: Thursday, 3 May, 3-5<sup>30</sup> P.M.

G. COMMITTEE TO DETERMINE RELATIVE IMPORTANCE  
OF PRIMARY EDUCATION OBJECTIVES

Proposed Responsibilities

In general, to review approximately 80 "life-skills" objectives of primary education and to judge their relative importance as things to be learned by children who must stop school after 4-5 years.

Specifically, Committee G would be presented with a list of 80 life-skills objectives (and 20 examples each) that were previously prepared by Select Committee B. The Committee would be asked to judge their relative importance for the learning of children who have to leave primary school after 4-5 years.

Initially, committee members would individually rate each of the 80 objectives on a five-point scale. The field staff would then sum these ratings and rank-order the objectives on importance.

The full Committee would then judge the objectives on relative importance by assigning a value of "10" which they consider to be of highest importance. Other objectives would then be judged in relation to those of "high importance." For example, if an objective were considered one-half as important as those of "high importance" it would be assigned a "5" (one-half of 10). Similarly, one judged to be one-tenth as important would be given a value of "1".

By following the above procedure, the results will be the judged relative importance, i.e. "objective X is three times as important as objective Y."

Proposed Makeup of Committee

	<u>Cebu City</u>	<u>Consolacion</u>
Primary mathematics Teacher	1	1
Primary science Teacher	1	1
Primary social studies Teacher	1	1
Primary language Teacher	1	1
Primary art/music Teacher	1	1
School Counselor/Administrator	1	1
Parent	1	1
Businessman	1	1
Health worker	1	1
Religious leader	1	1
Representative of Culture/Arts	1	1
Industrial Manager	1	-
Agriculture Extension Worker	-	1
	<hr/>	<hr/>
TOTALS	12	12

TOTAL Committee = 24

Proposed Time of Meeting

A single meeting of the total committee is proposed for Friday,  
4 May, 3-5<sup>30</sup> P.M.

H. COMMITTEE TO DETERMINE RELATIVE IMPORTANCE  
OF PRIMARY EDUCATION OBJECTIVES (USING  
AS REFERENCES THE DESIRABLE ACHIEVEMENTS  
OF TEENAGERS AND ADULTS)

Proposed Responsibilities

In general, to review approximately 80 "life-skills" objectives of primary education and to judge their relative importance as things to be learned by children who must stop school after 4-5 years.

Specifically, Committee H would be presented with a list of 80 life-skills objectives (and 20 examples each) that were previously prepared by Select Committee B. The Committee would be asked to judge their relative importance for the learning of children who have to leave primary school after 4-5 years. When making these judgments the Committee will refer to lists of desirable teenage achievements (as developed by Select Committee C) and of desirable adult achievements (as developed by Select Committee D).

Initially, committee members would individually rate each of the 80 objectives on a five-point scale. The field staff would then sum these ratings and rank-order the objectives on importance.

The full Committee would then judge the objectives on relative importance by assigning a value of "10" which they consider to be of highest importance. Other objectives would then be judged in relation to those of "high importance." For example, if an objective were considered one-half as importance as those of "high importance" it would be assigned a "5" (one-half of 10). Similarly, one judged to be one-tenth as importance would be given a value of "1".

By following the above procedure, the results will be the judged relative importance, i.e. "objective X is three times as important as objective Y."

Proposed Makeup of Committee

	<u>Cebu City</u>	<u>Consolacion</u>
Primary mathematics Teacher	1	1
Primary science Teacher	1	1
Primary social studies Teacher	1	1
Primary language Teacher	1	1
Primary art/music Teacher	1	1
School Counselor/Administrator	1	1
Parent	1	1
Businessman	1	1
Health worker	1	1
Religious leader	1	1
Representative of Culture/Arts	1	1
Industrial Manager	1	-
Agricultural Extension Worker	-	1
	<hr/>	<hr/>
TOTALS	12	12

TOTAL Committee = 24

Proposed Time of Meeting

A single meeting of the total committee is proposed for Friday,  
4 May, 3-5<sup>30</sup> P.M.

I. COMMITTEE TO DETERMINE RELATIVE CONTRIBUTION  
OF PRIMARY EDUCATION ACHIEVEMENTS (P) TO  
ADULT ACHIEVEMENTS (A): P TO A  
(Sub-committees I<sub>1</sub> through I<sub>8</sub>)

Proposed Responsibilities

In general, Committee members would be given a set of approximately 80 objectives of primary education (as developed by Select Committee B) and approximately 40 descriptions of adult achievements (as developed by Select Committee D). They will be asked to judge the relative contribution of every primary objective (P) to each adult achievement (A). The total process should require 3 hours.

Specifically, the overall committee would be split into 8 sub-committees (I<sub>1</sub> through I<sub>8</sub>) each of whom would have the responsibility of judging the relative contribution of all 80 primary objectives to each of 5 adult achievements (each of the 8 sub-committees taking a separate set of 5 adult achievements so that all 40 adult achievements can be covered in a reasonable time). The makeup of each sub-committee (see below) would be appropriate to the particular set of 5 adult achievements upon which it would work.

A sub-committee would consider only one adult achievement at a time, and would be asked to judge (quantitatively) the relative contribution of each of the 80 primary objectives to the one adult achievement under consideration. The idea of relative contribution is important both ideationally ("primary objective X would make three times the contribution to this adult achievement as would objective Y") and mathematically (judgments of relative contribution provide a ratio scale which permits contributions to be multiplied by the "value" of a given adult achievement\* the result of which can be summed across all adult achievements to determine the relative value of each primary objective). It is not important that the Committee understand the mathematical treatment in detail, however, the staff will give a short introductory briefing to the Committee so that its members can understand how their work fits into the overall project.

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\* As judged by Committee F.

How are judgments of relative contribution to be made? For each adult achievement being considered, a sub-committee would examine the 80 primary objectives and judge which ones contribute most to the given adult achievement. They would then assign a value of "10" to these "high contributors". They would then examine the remaining primary objectives and judge how much each contributes in relation to the "high contributors". If, for example, a given primary objective was judged to contribute about half as much, it would be assigned a value of "5" (one-half of the "10" previously assigned the "high contributors"). If another objective were judged to contribute about one-tenth as much, it would be assigned a value of "1". In this way a sub-committee would make these judgments for all 80 primary objectives as they contribute to an adult achievement. This process would be repeated five times, once for each of the five adult achievements assigned to the committee.

#### Proposed Makeup of Committee

Total number of members should be 72 persons. As indicated previously, Committee I should be composed of eight sub-committees ( $I_1$  through  $I_8$ ), the makeup of each being dependent upon the set of five adult achievements with which they would deal. The proposed makeup of each sub-committee is presented below.

Sub-committee  $I_1$ : Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Youth worker or community social worker (Cebu City)  
Health worker (e.g. doctor)  
Civil Administrator  
Religious Leader

Sub-committee  $I_2$ : Primary mathematics teacher (Cebu City)  
Primary science teacher (Consolacion)  
Primary social studies or counselor (Cebu City)  
Primary language teacher (Consolacion)  
Primary art or music teacher (Cebu City)  
Youth worker or community social worker (Consolacion)  
Civil Administrator  
Politician (e.g. City Council Member)  
Political Science Faculty Member (University)

- Sub-committee I<sub>3</sub>: Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Youth worker or community social worker (Cebu City)  
Family Guidance Counselor  
Head of Family  
Wife/Mother
- Sub-committee I<sub>4</sub>: Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Youth worker or community social worker (Cebu City)  
Vocational Guidance Representative  
Businessman  
Agricultural Extension Representative
- Sub-committee I<sub>5</sub>: Primary mathematics teacher (Cebu City)  
Primary science teacher (Consolacion)  
Primary social studies or counselor (Cebu City)  
Primary language teacher (Consolacion)  
Primary art or music teacher (Cebu City)  
Youth worker or community social worker (Consolacion)  
Banker  
Labor Union Official  
Industrial Manager
- Sub-committee I<sub>6</sub>: Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Youth worker or community social worker (Cebu City)  
Head of Family  
Businessman  
Civil Administrator

Sub-committee I<sub>7</sub>: Primary mathematics teacher (Cebu City)  
Primary science teacher (Consolacion)  
Primary social studies or counselor (Cebu City)  
Primary language teacher (Consolacion)  
Primary art or music teacher (Cebu City)  
Youth worker or community social worker (Consolacion)  
Head of Family  
Community Welfare Representative  
Civil Administrator

Sub-committee I<sub>8</sub>: Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Youth worker or community social worker (Cebu City)  
Representative of Art/Music/Culture  
School Administrator  
Head of Household

Proposed Meeting Time

We propose that the meeting be held on Monday, 7 May, from 3-6 P.M.  
A school building would probably serve the purposes of this  
committee best; it would permit a general introductory session of  
all 64 committee members followed by separate meetings (8 persons  
each) of the eight sub-committees.

J. COMMITTEE TO DETERMINE RELATIVE CONTRIBUTION  
OF PRIMARY EDUCATION ACHIEVEMENTS (P) TO  
TEENAGE ACHIEVEMENTS (T): P TO T

(Sub-committees J<sub>1</sub> through J<sub>8</sub>)

Proposed Responsibilities

In general, Committee members would be given a set of approximately 80 objectives of primary education (as developed by Select Committee B) and approximately 40 descriptions of teenage achievements (as developed by Select Committee D). They will be asked to judge the relative contribution of every primary objective (P) to each teenage achievement (T). The total process should require 3 hours.

Specifically, the overall committee would be split into 8 sub-committees (J<sub>1</sub> through J<sub>8</sub>) each of whom would have the responsibility of judging the relative contribution of all 80 primary objectives to each of 5 teenage achievements (each of the 8 sub-committees taking a separate set of 5 teenage achievements so that all 40 teenage achievements can be covered in a reasonable time). The makeup of each sub-committee (see below) would be appropriate to the particular set of 5 teenage achievements upon which it would work.

A sub-committee would consider only one teenage achievement at a time, and would be asked to judge (quantitatively) the relative contribution of each of the 80 primary objectives to the one teenage achievement under consideration. The idea of relative contribution is important both ideationally ("primary objective X would make three times the contribution to this teenage achievement as would objective Y") and mathematically (judgments of relative contribution provide a ratio scale which permits contributions to be multiplied by the "value" of a given teenage achievement\* the result of which can be summed across all teenage achievements to determine the relative value of each primary objective). It is not important that the Committee understand the mathematical treatment in detail, however the staff will give a short introductory briefing to the Committee so that its members can understand how their work fits into the overall project.

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\* As judged by Committee K

How are judgments of relative contribution to be made? For each teenage achievement being considered, a such-committee would examine the 80 primary objectives and judge which ones contribute most to the given teenage achievement. They would then assign a value of "10" to these "high contributors". They would then examine the remaining primary objectives and judge how much each contributes in relation to the "high contributors". If, for example, a given primary objective was judged to contribute about half as much, it would be assigned a value of "5" (one-half of the "10" previously assigned the "high contributors"). If another objective were judged to contribute about one-tenth as much, it would be assigned a value of "1". In this way a sub-committee would make these judgments for all 80 primary objectives as they contribute to an teenage achievement. This process would be repeated five times, once for each of the five teenage achievements assigned to the committee.

Proposed Makeup of Committee

Total number of members should be 64 persons. As indicated previously, Committee J should be composed of eight sub-committees ( $J_1$  through  $J_8$ ), the makeup of each being dependent upon the set of five teenage achievements with which they would deal. The proposed makeup of each sub-committee is presented below.

Sub-committee  $J_1$ : Primary mathematics teacher (Cebu City)  
Primary science teacher (Consolacion)  
Primary social studies or counselor (Cebu City)  
Primary language teacher (Consolacion)  
Primary art or music teacher (Cebu City)  
Religious leader  
Youth leader  
Head of Household

Sub-committee  $J_2$ : Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Youth leader  
Political leader  
Health Worker

- Sub-committee J<sub>3</sub>: Primary mathematics teacher (Cebu City)  
Primary science teacher (Consolacion)  
Primary social studies or counselor (Cebu City)  
Primary language teacher (Consolacion)  
Primary art or music teacher (Cebu City)  
Scouts leader  
Teenager  
Civil Administrator
- Sub-committee J<sub>4</sub>: Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Technical Teacher (Secondary)  
Youth leader  
Industrial Manager
- Sub-committee J<sub>5</sub>: Primary mathematics teacher (Cebu City)  
Primary science teacher (Consolacion)  
Primary social studies or counselor (Cebu City)  
Primary language teacher (Consolacion)  
Primary art or music teacher (Cebu City)  
Scouts leader  
Teenager  
Cooperatives Representative
- Sub-committee J<sub>6</sub>: Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Teenager  
Father of Teenager  
Social Worker
- Sub-committee J<sub>7</sub>: Primary mathematics teacher (Cebu City)  
Primary science teacher (Consolacion)  
Primary social studies or counselor (Cebu City)  
Primary language teacher (Consolacion)  
Primary art or music teacher (Cebu City)  
Mother of Teenager  
Health Worker  
Youth leader

Sub-committee J<sub>8</sub>: Primary mathematics teacher (Consolacion)  
Primary science teacher (Cebu City)  
Primary social studies or counselor (Consolacion)  
Primary language teacher (Cebu City)  
Primary art or music teacher (Consolacion)  
Representative of Art/Culture  
Sports leader  
Youth leader

Proposed Meeting Time

We propose that the meeting be held on Tuesday, 8 May, from 3-6 P.M.  
A school building would probably serve the purposes of this committee  
best; it would permit a general introductory session of all 64  
committee members followed by separate meetings (8 persons each) of  
the eight sub-committees.

K. COMMITTEE TO DETERMINE RELATIVE CONTRIBUTION  
OF TEENAGE ACHIEVEMENTS (T) TO ADULT  
ACHIEVEMENTS (A): T TO A  
(Sub-committees  $K_1$  through  $K_8$ )

Proposed Responsibilities

In general, Committee members would be given a set of approximately 40 teenage achievements (as developed by Select Committee C) and approximately 40 descriptions of adult achievements (as developed by Select Committee D). They will be asked to judge the relative contribution of every teenage achievement (T) to each adult achievement (A). The total process should require 3 hours.

Specifically, the overall committee would be split into 8 sub-committees ( $K_1$  through  $K_8$ ) each of whom would have the responsibility of judging the relative contribution of all 40 teenage achievements to each of 5 adult achievements (each of the 8 sub-committees taking a separate set of 5 adult achievements so that all 40 adult achievements can be covered in a reasonable time). The makeup of each sub-committee (see below) would be appropriate to the particular set of 5 adult achievements upon which it would work.

A sub-committee would consider only one adult achievement at a time, and would be asked to judge (quantitatively) the relative contribution of each of the 40 teenage achievements to the one adult achievement under consideration. The idea of relative contribution is important both ideationally ("teenage achievement X would make three times the contribution to this adult achievement as would achievement Y") and mathematically (judgments of relative contribution provide a ratio scale which permits contributions to be multiplied by the "value" of a given adult achievement\* the result of which can be summed across all adult achievements to determine the relative value of each teenage achievement). It is not important that the Committee understand the mathematical treatment in detail, however, the staff will give a short introductory briefing to the Committee so that its members can understand how their work fits into the overall project.

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\* As judged by Committee F.

How are judgments of relative contribution to be made? For each adult achievement being considered, a sub-committee would examine the 40 teenage achievements and judge which ones contribute most to the given adult achievement. They would then assign a value of "10" to these "high contributors". They would then examine the remaining teenage achievements and judge how much each contributes in relation to the "high contributors". If, for example, a given teenage achievement was judged to contribute about half as much it would be assigned a value of "5" (one-half of the "10" previously assigned the "high contributors"). If another achievement were judged to contribute about one-tenth as much, it would be assigned a value of "1". In this way a sub-committee would make these judgments for all 40 teenage achievements as they contribute to an adult achievement. This process would be repeated five times, once for each of the five adult achievements assigned to the committee.

#### Proposed Makeup of Committee

Total number of members should be 64 persons. As indicated previously, Committee K should be composed of eight sub-committees ( $K_1$  through  $K_8$ ), the makeup of each being dependent upon the set of five adult achievements with which they would deal. The proposed makeup of each sub-committee is presented below.

Sub-committee  $K_1$ : Youth or Scouts Leader (Cebu City)  
Guidance Counselor (Consolacion)  
Technical Trainer in health (Cebu City)  
Technical Trainer in business (Consolacion)  
Technical Trainer in Industrial  
Arts or Agriculture (Cebu City)  
Health worker  
Civil Administrator  
Religious leader

Sub-committee  $K_2$ : Youth or Scouts Leader (Consolacion)  
Guidance Counselor (Cebu City)  
Technical Trainer in health (Consolacion)  
Technical Trainer in business (Cebu City)  
Technical Trainer in Industrial  
Arts or Agriculture (Consolacion)  
Civil Administrator  
Politician (e.g. City Council Member)  
Political Science Faculty Member (University)

Sub-committee K<sub>3</sub>: Youth or Scouts Leader (Cebu City)  
Guidance Counselor (Consolacion)  
Technical Trainer in health (Cebu City)  
Technical Trainer in business (Consolacion)  
Technical Trainer in Industrial  
Arts or Agriculture (Cebu City)  
Family Guidance Counselor  
Head of Family  
Wife/Mother

Sub-committee K<sub>4</sub>: Youth or Scouts Leader (Consolacion)  
Guidance Counselor (Cebu City)  
Technical Trainer in health (Consolacion)  
Technical Trainer in business (Cebu City)  
Technical Trainer in Industrial  
Arts or Agriculture (Consolacion)  
Vocational Guidance Representative  
Businessman  
Agricultural Extension Representative

Sub-committee K<sub>5</sub>: Youth or Scouts Leader (Cebu City)  
Guidance Counselor (Consolacion)  
Technical Trainer in health (Cebu City)  
Technical Trainer in business (Consolacion)  
Technical Trainer in Industrial  
Arts or Agriculture (Cebu City)  
Banker  
Labor Union Official  
Industrial Manager

Sub-committee K<sub>6</sub>: Youth or Scouts Leader (Consolacion)  
Guidance Counselor (Cebu City)  
Technical Trainer in health (Consolacion)  
Technical Trainer in business (Cebu City)  
Technical Trainer in Industrial  
Arts or Agriculture (Consolacion)  
Head of Family  
Businessman  
Civil Administrator

Sub-committee K<sub>7</sub>: Youth or Scouts Leader (Cebu City)  
Guidance Counselor (Consolacion)  
Technical Trainer in health (Cebu City)  
Technical Trainer in business (Consolacion)  
Technical Trainer in Industrial  
Arts or Agriculture (Cebu City)  
Head of Family  
Community Welfare Representative  
Civil Administrator

Sub-committee K<sub>8</sub>: Youth or Scouts Leader (Consolacion)  
Guidance Counselor (Cebu City)  
Technical Trainer in health (Consolacion)  
Technical Trainer in business (Cebu City)  
Technical Trainer in Industrial  
Arts or Agriculture (Consolacion)  
Representative of Art/Music/Culture  
School Administrator  
Head of Household

Proposed Meeting Time

We propose that the meeting be held on Wednesday, 9 May, from 3-6 P.M.  
A school building would probably serve the purposes of this committee  
best; it would permit a general introductory session of all 64  
committee members followed by separate meetings (8 persons each) of  
the eight sub-committees.

**MODULE 11**

**FORMULATING CHANGE OBJECTIVES**

**INNOTECH  
MARCH 1973**

FRAME 1

PREVIEW: NO WRITTEN RESPONSE REQUIRED

OVERVIEW

In Module 8, you learned to formulate educational problems which:

- (1) focus upon the real problem
- (2) do not restrict or limit possible solutions to solve the problem
- (3) describe the consequences that might result if the problem is not solved.

In studying the various interpretations of the systems approach (i.e., Klaus, Lehman, Nichols), you also learned that the step following the statement of the problem is the formulation of the objective. The objective should represent a clear statement of desired change.

OBJECTIVES

After completing this Module, you should be able to formulate change objectives from statements of educational problems. Your change objectives will represent either:

A Desired Change in Performance (Part I of the Module)

or

A Desired Change in a Situation (Part II of the Module)

FRAME 1 (continued)

DIRECTIONS

- (1) Complete the Pre-Test for Part I (Frame 2)
- (2) Depending upon your performance, you will be directed to proceed with Part I instruction or skip to the Pre-Test for Part II (Frame 7)
- (3) As you proceed through each frame, make certain that you
  - (a) answer each question in writing
  - (b) cover the FEEDBACK (our suggested correct answer) while you are responding
  - (c) compare your written response to our suggested answer

GO ON TO FRAME 2

FRAME 2

PART I: PRE-TEST

Perhaps you already know how to formulate a change objective which represents a desired change in performance. If so, there is no need for you to complete Part I of this program.

From the following two problem statements, formulate performance change objectives:

- (1) Problem: "More learning opportunities need to be provided for rural children who are not in school. Otherwise they will not learn the 3R's; they will probably become illiterate and bring-up their children the same way; they will be very limited outside of their villages."

Change

Objective:

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- (2) Problem: "Many children are not able to read and understand newspaper when they leave primary school. As a result, they are not informed about what is happening in their countries; they are not able to vote intelligently; and they perpetuate illiteracy

Change

Objective:

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FRAME 2 (continued)

————— FEEDBACK —————

TAKE YOUR COMPLETED PRE-TEST TO YOUR INSTRUCTOR FOR  
EVALUATION. DO NOT GO ON TO FRAME 3 UNTIL INSTRUCTED

MODULE 11  
ANSWERS TO PRE-TEST  
PART I

FRAME 2

(1) Change

Objective: Answer must specify:

- (A) the intended amount of change between the current and desired performance. For example, "increase the reading level of children from \_\_\_% (current level) to \_\_\_% (desired level)"
- (B) the target time in which to achieve the desired change. For example, "within a period of three years".
- (C) the criteria to measure the achievement of the objective. For example, "as measured by their ability to read and understand newspapers when they leave primary school."

(2) Change

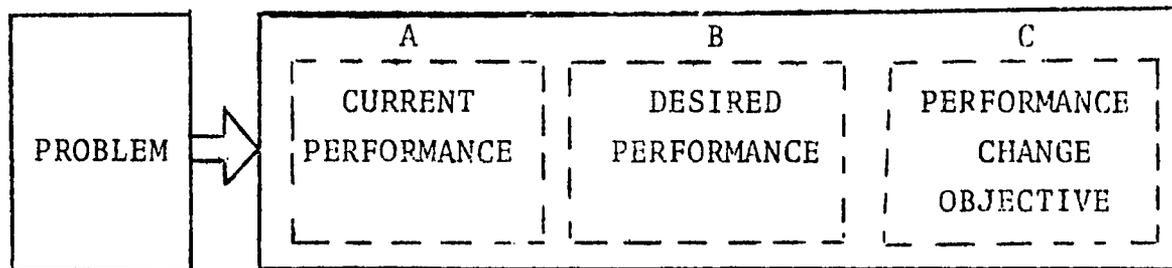
Objective: Answer must specify:

- (A) the intended amount of change between the current and desired performance. For example, "increase the percentage of teachers who make use of practical applications in teaching basic science from \_\_\_% (current percentage) to \_\_\_% (desired percentage)."
- (B) the target time in which to achieve the desired change. For example "within a period of two years."

(C) the criteria to measure the achievement of the objective. For example, "as measured by supervisory observations of practical applications in the classrooms".

FRAME 3 A performance change objective is a statement  
 PART I specifying a change in performance from what a person  
 does now (current performance) to what he needs to do  
 in order to function effectively (desired performance).  
 The person might be a farmer, student, teacher, an  
 administrator, a lecturer, an employee, etc.  
 A performance change objective must also specify the  
 criteria for measuring the achievement of the objective.

FORMULATION OF PERFORMANCE CHANGE OBJECTIVE



- A. Current Performance. Based upon the problem, specify the present performance level. For example, the current low level of reading within the adult population or the current discrepancy in mathematics performance between rural and urban primary children.
- B. Desired Performance. Specify the changes in performance which you desire to bring about. For example, the desired increase in reading level of adults or the desired increase in the mathematics performance of rural children. You must also specify the target time in which you expect to achieve the desired performance (e.g., within two years, before the end of three months, in the next decade, etc.)
- C. Change Objective. Specify the intended amount of change between the current and desired performance. For example, increase the reading level of adults from \_\_\_% to \_\_\_% within a period of \_\_\_ years. Specify the criteria to measure the achievement of your objective (e.g. as measured by scores on the National Literacy Reading Examination).

FRAME 3 (continued)

EXAMPLE: Formulation of a Performance Change Objective

<u>PROBLEM</u>	A	B	C
<p>Rural adults are not able to read local newspapers, simple public notices, and signs. As a result, they have to depend on secondhand information about many matters that may affect their lives; they cannot vote intelligently; they may be deliberately misinformed by unscrupulous people.</p>	<p><u>CURRENT PERFORMANCE</u></p> <p>Only 10% of rural adults can read local newspapers, simple public notices, and signs.</p>	<p><u>DESIRED PERFORMANCE</u></p> <p>50% of the rural adult population will be able to read local newspapers, simple public notices, and signs within five years.</p>	<p><u>PERFORMANCE CHANGE OBJECTIVE</u></p> <p>To increase the percentage of the rural adult population who can read from 10% to 50% within five years; this desired change will be measured by their ability to read and comprehend simple articles from newspapers, read public notices, and read signs.</p>

FRAME 3 (continued)

Given statements of the Problem, Current Performance, and Desired Performance, formulate the Performance Change Objective (in column C):

<u>PROBLEM</u>	A	B	C
<p>Children in rural schools do not perform as well as children in urban schools on the national mathematics examination; consequently, they are not able to compete with urban children for jobs requiring higher level mathematics skills; they cannot pursue more advanced mathematical, scientific, or technical training.</p>	<p><u>CURRENT PERFORMANCE</u> On the national examination, rural children, on the average score 25 percentile points lower than children in urban schools.</p>	<p><u>DESIRED PERFORMANCE</u> On the national mathematics examination, there should be no difference in scores between children attending rural schools and children in urban schools by the end of two years.</p>	<p><u>PERFORMANCE CHANGE OBJECTIVE</u></p>

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FEEDBACK

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C

PERFORMANCE

CHANGE

OBJECTIVE

To increase by  
25 percentile  
points the  
mathematics  
performance of  
children in  
rural schools,  
as measured by  
their scores  
on the  
national  
mathematics  
examination.  
This change  
will be  
accomplished  
within 2 years.

FRAME 4

Given statements of the Problem and the Current Performance, hypothesize the Desired Performance (in column B) and formulate the Performance Change Objective (in column C)

<u>PROBLEM</u>	A	B	C
<p>Most of the teachers who have been teaching mathematics for more than seven years restrict themselves to the use of one method of teaching mathematics. Consequently, their pupils are not exposed to newly developed concepts and to a variety of learning methods; at the same time, teachers themselves are not able to upgrade their teaching methods.</p>	<p><u>CURRENT PERFORMANCE</u></p> <p>90% of the teachers who have been teaching mathematics for more than seven years restrict themselves to the use of one method of teaching mathematics</p>	<p><u>DESIRED PERFORMANCE</u></p> <p>Be careful! "Increase the number of methods used, not the number of teachers using one method."</p>	<p><u>PERFORMANCE CHANGE OBJECTIVE</u></p>

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FEEDBACK

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<u>B</u> <u>DESIRED</u> <u>PERFORMANCES</u>	<u>C</u> <u>PERFORMANCE</u> <u>CHANGE OBJECTIVE</u>
90% of teachers who have been teaching mathematics for more than seven years will use at least three (or some other number greater than one) new modern methods of teaching mathematics in their classrooms before the end of one school year (or within some other definite period of time)	To increase from one to three the number of modern methods used in the teaching of mathematics among teachers who have been teaching mathematics for more than seven years; this change will be accomplished within one school year and will be measured by observations made by classroom supervisors (or by some other way of measuring whether the teachers use these new methods.

FRAME 5

Given only a statement of the problem, hypothesize the Current Situation (in column A) and the Desired Situation (in column B) and formulate the Performance Change Objective (in column C)

<u>PROBLEM</u>	A	B	C
<p>Approximately 90% of adults in this Constituency do not understand (a) how the Member of Parliament can represent community interests and (b) how individual participation in civic issues can have significant collective benefits. Consequently, these adults are not able to fully utilize the services of the Member of Parliament for legitimate issues and are not able to obtain maximum collective benefits of individual participation in civic issues.</p>	<p><u>CURRENT PERFORMANCE</u></p>	<p><u>DESIRED PERFORMANCE</u></p>	<p><u>PERFORMANCE CHANGE OBJECTIVE</u></p>

FRAME 5 (continued)

FEEDBACK

A <u>CURRENT PERFORMANCE</u>	B <u>DESIRED PERFORMANCE</u>	C <u>PERFORMANCE CHANGE OBJECTIVE</u>
<p>Only 10% of the adults of this Constituency know (a) How the Member of Parliament can represent community interests and (b) How individual participation in civic issues can have significant collective benefits</p>	<p>50% (or some percentage higher than 10%) of the adults in this Constituency will know (a) How the Member of Parliament can represent community interests and (b) How individual participation in civic issues can have significant collective benefits. This change will be accomplished within two years (or within some other definite period of time)</p>	<p>To increase from 10% to 50% the percentage of adults in this Constituency who know (a) How the Member of Parliament can represent community interests and (b) How individual participation in civic issues can have significant collective benefits. This objective will be achieved within two years; success will be measured by increased use of Member of Parliament's services and by greater individual participation in civic issues (other ways of measuring achievement of the objective are possible)</p>

FRAME 6

CRITERION POST-TEST

From the following problem statements, formulate performance change objectives.

- (1) Problem: "More rural children need to develop a sense of national pride"

Change

Objective:

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- (2) Problem: "It is necessary for more students to learn science skills."

Change

Objective:

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FEEDBACK

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TAKE YOUR COMPLETED POST-TEST TO YOUR INSTRUCTOR FOR EVALUATION. DO NOT GO ON TO PART II UNTIL INSTRUCTED

MODULE 11  
ANSWERS TO CRITERION POST-TEST  
PART I

FRAME 6

(1) Change

Objective: Answer must specify:

- (A) the intended amount of change between the current and desired performance. For example, "increase the number of children who have a sense of national pride from \_\_\_% (current number) to \_\_\_% (desired number)"
- (B) the target time in which to achieve the desired change. For example, "within a period of four years."
- (C) the criteria to measure the achievement of the objective. For example, "as measured by their use of the national language in their everyday affairs; their desire to work within their own country (i.e., if offered a job outside of the country); their participation in national affairs (i.e., civic, political, social).

(2) Change

Objective: Answer must specify:

- (A) the intended amount of change between the current and desired performance. For example, "increase the level of proficiency in science skills of children from \_\_\_% (current level of performance) to \_\_\_% (desired level of performance)."
- (B) the target time in which to achieve the desired change. For example, "within five years."
- (C) the criteria to measure the achievement of the objective. For example, "as measured on their performance on the national science examination."

FRAME 7

PART II: PRE-TEST

Perhaps you already know how to formulate a change objective that represents a desired change in a situation. If so, there is no need for you to complete Part II of this program.

From the following problem statements, formulate situational change objectives:

- (1) Problem: "The level of malnutrition among young children in Asiland is increasing at an alarming rate. As a result, children have contacted a variety of diseases such as cholera, worms, and typhoid. In addition, many children are starving."

Change Objective: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- (2) Problem: "The rate of population growth in Country X is too high in proportion to its economic growth rate"

Change Objective: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ FEEDBACK \_\_\_\_\_

TAKE YOUR COMPLETED PRE-TEST TO YOUR INSTRUCTOR FOR EVALUATION.  
DO NOT GO ON TO FRAME 8 UNTIL INSTRUCTED.

MODULE 11  
ANSWERS TO PRE-TEST  
PART II

FRAME 7

(1) Change

Objective: Answer must specify:

- (A) the intended amount of change between the current and desired situation. For example, "reduce the level of malnutrition among children in Asiland from \_\_\_% (current level) to \_\_\_% (desired level).
- (B) the target time in which to achieve the desired change. For example, "within a period of two years."
- (C) the criteria to measure the achievement of the objective. For example, "as measured by official Ministry of Health malnutrition statistics."

(2) Change

Objective: Answer must specify:

- (A) the intended amount of change between the current and desired situation. For example, "reduce the rate of population growth in Country X from \_\_\_% (current rate) to \_\_\_% (desired rate).
- (B) the target time in which to achieve the desired change. For example, "within four years."

(C) the criteria to measure the achievement of the objective. For example, "as measured by population census figures provided by the Ministry for National Development".

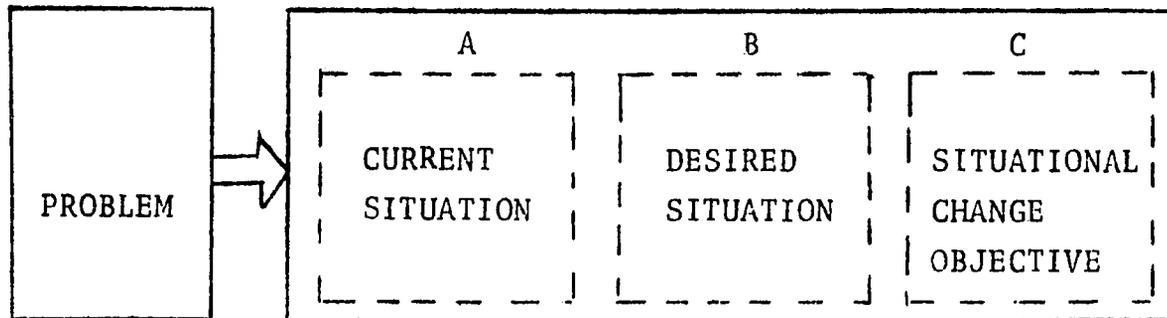
## FRAME 8

### PART II

A change objective can be a statement specifying a change from the current state of affairs (current situation) to a desired state of affairs (desired situation).

A situational change objective also specifies the criteria for measuring the achievement of the objective.

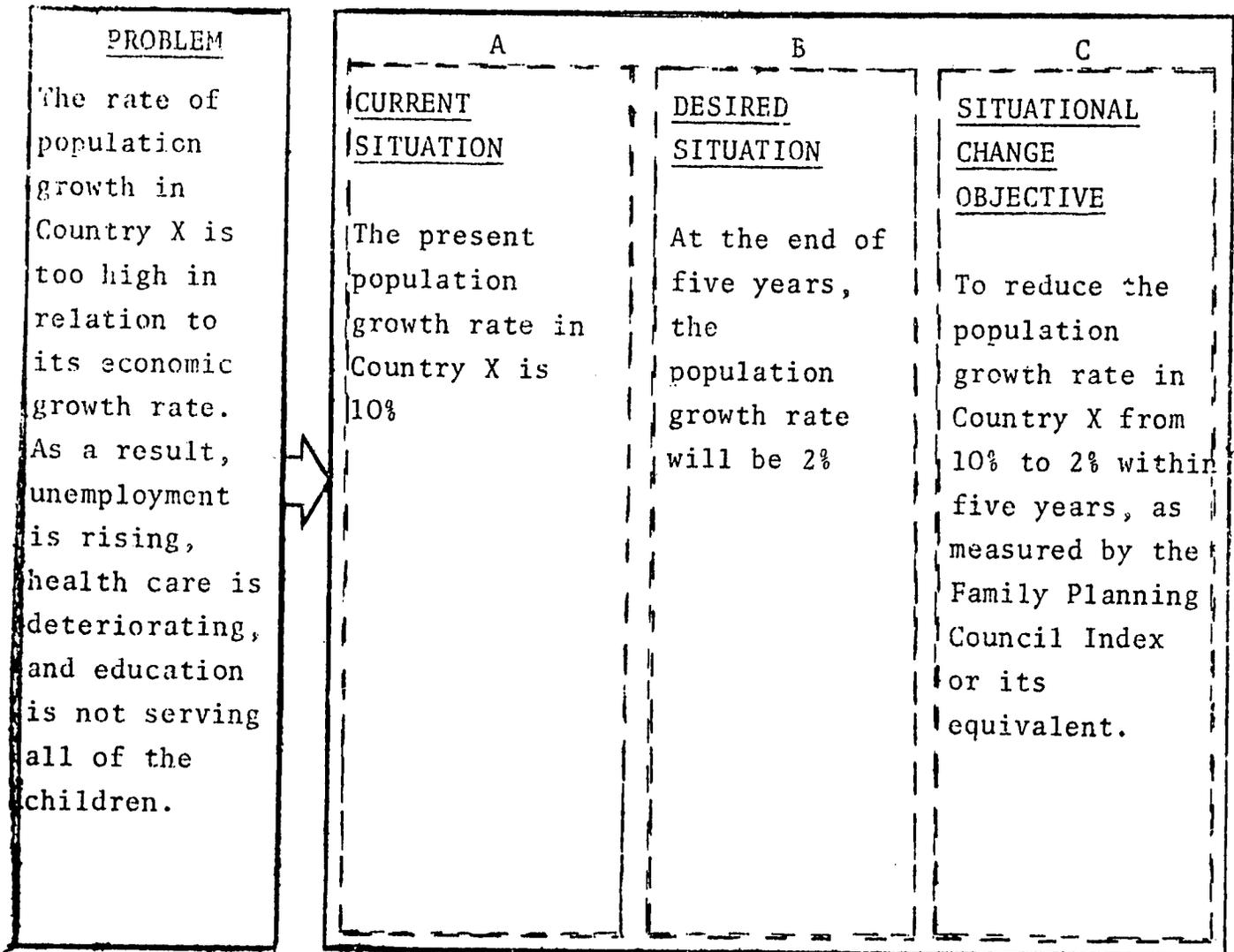
#### DERIVATION OF SITUATIONAL CHANGE OBJECTIVE



- A. Current Situation - Based upon the problem, specify the present state of affairs in a particular situation. For example, the present situation might be the high rate of population growth or the low level of literacy.
- B. Desired Situation - Specify the desired changes in situation which you intend to bring about. For example, the desired decrease in the rate of population growth or the desired increase in the level of literacy. You must also specify the target time in which you expect to achieve the desired change (e.g., within a definite number of years, months, etc.)
- C. Situational Change Objective - Specify the intended amount of change between the current and desired situation. For example, decrease the population growth rate from 50% to 10% in five years or decrease the level of illiteracy from 90% to 45% within two years. Specify the criteria to measure the attainment of the desired situation (e.g., as measured by the National Census Bureau Statistics)

FRAME 8 (continued)

EXAMPLE: Formulation of a Situational Change Objective



FRAME 8 (continued)

Given statements of the Problem, Current Situation, and Desired Situation, formulate the Situational Change Objective.

<u>PROBLEM</u>	A	B	C
<p>In Country Y, the proportion of elementary school drop-outs is much higher in the rural schools; as a result, fewer rural children proceed to secondary schools and, consequently, are not able to compete equally with urban children for jobs that require a secondary education.</p>	<p><u>CURRENT SITUATION</u></p> <p>Present proportion of elementary school drop-outs in the rural schools is 60%, as compared to 35% in the urban schools.</p>	<p><u>DESIRED SITUATION</u></p> <p>At the end of three years, there will be no difference in the proportion of elementary school children who dropout of rural schools versus urban schools.</p>	<p><u>SITUATIONAL CHANGE OBJECTIVE</u></p>

FEEDBACK

C

SITUATIONAL  
CHANGE OBJECTIVE

To decrease the proportion of elementary school children who dropout of rural schools in Country Y from 60% to 35% (i.e., the same proportion as in the urban schools) within three years; this change will be measured by a survey of rural and urban elementary school dropout rates to be conducted by the Ministry of Education (or by some other way of measuring the dropout rate.

FRAME 9

Given statements of the Problem and Current Situation, hypothesize a statement of the Desired Situation (in column B) and formulate the Situational Change Objective (in column C):

<u>PROBLEM</u>	A	B	C
<p>Home Economics Laboratories in most secondary schools are used only two hours per day as compared to the Science Laboratories which are used approximately six hours per day. As a result, the cost of maintaining the Home Economics Laboratory is not justified in proportion to its utilization.</p>	<p><u>CURRENT SITUATION</u></p> <p>Home Economics Laboratories in most secondary schools are used about one-third as often as the Science Laboratories.</p>	<p><u>DESIRED SITUATION</u></p>	<p><u>SITUATIONAL CHANGE OBJECTIVE</u></p>

FRAME 9 (continued)

FEEDBACK

B <u>DESIRED SITUATION</u>	C <u>SITUATIONAL CHANGE OBJECTIVE</u>
Home Economics Laboratories will be used as often as the Science Laboratories (or equivalent response which makes more use of the Home Economics Laboratories) by the end of the current school year (or within some other definite period of time)	To increase the utilization of Home Economics Laboratories in secondary schools from an average of two hours per day (i.e., as much as the utiliza- tion of the Science Laboratories); this change will be achieved by the end of the current school year and will be measured by a comparative survey conducted by the Ministry of Education (or by some other way of measuring utilization of the Home Economics Laboratories.

FRAME 10

From the Problem Statement, hypothesize the Current Situation (in column A) and the Desired Situation (in column B) and formulate the Situational Change Objective (in column C):

<u>PROBLEM</u>	A	B	C
<p>Very few farmers in rural areas in Country X are able to obtain any advanced information on local weather conditions. As a result, most farmers are not able to plan ahead to increase their crop production.</p>	<p><u>CURRENT SITUATION</u></p>	<p><u>DESIRED SITUATION</u></p>	<p><u>SITUATIONAL CHANGE OBJECTIVE</u></p>

FRAME 10 (continued)

FEEDBACK

A <u>CURRENT SITUATION</u>	B <u>DESIRED SITUATION</u>	C <u>SITUATIONAL CHANGE OBJECTIVE</u>
<p>20% (or some small percentage) of rural farmers in Country X are not able to obtain any advanced information on the local weather conditions.</p>	<p>70% (or some higher percentage than the current situation) of rural farmers in Country X will be able to obtain advanced information on the local weather conditions within a period of two years (or within some other definite period of time)</p>	<p>To increase the percentage of rural farmers who will be able to obtain advanced information on local weather conditions from 20% to 70% within three years. This change will be measured by a field survey to be conducted by the Ministry of Agriculture (or by some other way to measure whether farmers obtain advanced weather information)</p>

PART II: CRITERION POST-TEST

From the following problem statements, formulate situational change objectives.

- (1) Problem: "The infant mortality rate in rural areas of Asiland has doubled in the past year."

Change Objective: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- (2) Problem: "A high proportion of houses in urban Asiland have been condemned by the Ministry of Housing. As a result, the residents will no longer be permitted to live there after a period of six months."

Change Objective: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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FEEDBACK

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TAKE YOUR COMPLETED POST-TEST TO YOUR INSTRUCTOR FOR EVALUATION

MODULE 11  
ANSWERS TO CRITERION POST-TEST  
PART II

FRAME 11

(1) Change

Objective: Answer must specify:

- (A) the intended amount of change between the current and desired situation. For example, "reduce the infant mortality rate in rural areas of Asiland from \_\_\_% (current rate) to \_\_\_% (desired rate.)"
- (B) the target time in which to achieve the desired change. For example, "by the end of a two year period of time."
- (C) the criteria to measure the achievement of the objective. For example, "as measured by mortality statistics provided by the Ministry of Health."

(2) Change

Objective: Answer must specify:

- (A) the intended amount of change between the current and desired situation. For example, "increase the proportion of adequate housing in urban Asiland from \_\_\_% (current proportion) to \_\_\_% (desired proportion)."

- (B) the target time in which to achieve the desired change. For example, "within a period of four months."
- (C) the criteria to measure the achievement of the objective. For example, "as measured by an evaluation of housing standards to be conducted by the Ministry of Housing."