AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523

BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY
Batch 57

1. SUBJECT CLASSIFICATION
A. PRIMARY: TEMPORARY
B. SECONDARY:

2. TITLE AND SUBTITLE

The impact system for low-cost primary education

3. AUTHOR(S)

Nichols, D.C.

4. DOCUMENT DATE	5. NUMBER OF PAGES	6. ARC NUMBER
1975	61p.	ARC

7. REFERENCE ORGANIZATION NAME AND ADDRESS

AIR

8. SUPPLEMENTARY NOTES *(Sponsoring Organization, Publishers, Availability)*

(In AID-IMP-21200/75-FR)

9. ABSTRACT

(Education R&D)
A problem most developing countries face today is how to provide high-quality, low-cost educational programs. Project IMPACT (I[illegible]uctional Management by Parents, Community, and Teachers) is an educational experiment being conducted in nine villages in Indonesia and the Philippines and its purpose is to provide a quality primary education at a substantial reduction in per-pupil costs. It uses a variety of non-teacher learning methods, including self-instruction, peer-group learning, ungraded progression, skill training by volunteers in the community, and programmed teaching and tutoring by older students. What is new about the project is its management of the various components and their integration into a total learning system directed toward the achievement of stated objectives. The plan for IMPACT by 1978 is to have 26 school personnel serving a cluster of ten contiguous villages, each with 200-400 primary age students. Traditional staffing for a system with that many students would number 102 school personnel. IMPACT school facilities are called Community Learning Centers, partly to de-emphasize the idea of teacher-led school classes. On the grounds of each center are 30 to 40 thatch and bamboo structures, called "learning kioskos," built of local materials by parents. Beginners, in groups of six to eight, learn reading and numeracy under guidance of older primary students. Self-pacing is emphasized. Weekly contracts and incentive awards are used. Parents accept responsibility for their children's learning. Learning segments in IMPACT are called modules. They feature clearly stated objectives, instructions, short learning sequences, evaluation exercises, review, and posttests. The complete primary curriculum consists of some 1200 modules--200 per year, with approximately 35 each year in a given subject.

10. CONTROL NUMBER
PN-AAD-540

11. PRICE OF DOCUMENT

12. DESCRIPTORS

13. PROJECT NUMBER

14. CONTRACT NUMBER
AID-490-7 GTS

15. TYPE OF DOCUMENT

AID 590-1 (4-74)

PN-AAD-546
AID/490-7 GTS

AIR-IMP-21200/75-FR

The IMPACT System for Low Cost Primary Education

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Prepared for the
U.S. Agency for International Development, Washington, D.C.

Contract Number AID 490-7

July 1975

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THE IMPACT SYSTEM

FOR LOW COST PRIMARY EDUCATION

Daryl G. Nichols

American Institutes for Research

July 1975

DISCOURSES

The Citizens were deeply concerned about their failure to provide a primary education for all their children. It was decided that they would seek the advice of an old man who was thought to be the wisest in the land and who over the years had become known by all as the Teacher. The Citizens traveled far.

Teacher: Welcome Citizens. What brings you such a distance?

Citizens: We don't have enough money to let all our children go through primary school. We have taxed ourselves to the limit and are spending one-third of all tax money for education. We can't think of any other ways to raise more money.

Teacher: What is the money for primary education used for?

Citizens: We use it for school buildings, desks, books, and teachers.

Teacher: Since your primary constraint seems to be money, have you tried to use the money you have to educate more children?

Citizens: We have indeed! Teachers' salaries are kept low, and classes of 50 to 70 children are common. Youngsters sit four to each desk which was designed originally for only two. Typically there is only one or two textbooks in a class so the teacher must write everything on the chalkboard for the children to copy.

Teacher: Do the children learn under these conditions?

Citizens: How can they? We are afraid that by trying to provide places in primary school for as many children as possible, the quality of what is learned falls far short of what it should be.

Teacher: How many of your children finish a primary education?

Citizens: Less than one-half. Almost all the children start in Grade 1, but less than half finish the full six grades of primary school.

Teacher: I am truly sorry. Perhaps if we were to try to approach the situation systematically we could think of some solutions. First, can you state your problem as clearly as possible?

Citizens: We don't have enough money. That is clear enough.

Teacher: I admit that lack of money is a constraint on the solutions you

may adopt, but is money the real problem?

Citizens: Money is always a problem, but we think we know what you mean. Our real problem, then, is that less than one-half of our children finish primary school.

Teacher: We limited our possible solutions when we focused on money; maybe we also are limiting ourselves by focusing on school. Why school?

Citizens: Is there any way other than school for children to gain an education?

Teacher: Perhaps yes or perhaps no.

Citizens: So by saying "school," we may be limiting our solutions? But if we say "education," we might think of solutions that may or may not require schools as we know them.

Teacher: How would you now state your problem?

Citizens: Less than one-half of our children receive a primary education.* We and our elders fought for our independence, but we clung to the traditional system of education, little realizing that we had not achieved independence in education. So we can now think about education itself rather than schools. Let's think of ways to solve our problem without schools!

Teacher: Perhaps yes, perhaps no. Don't you limit your solutions just as much by saying "without schools" as by saying "with schools?"

Citizens: Of course that would limit us. Maybe our solution will include schools as we now know them--and maybe it won't.

Teacher: We have come this far in our thinking by approaching the situation systematically. Why don't we continue by stating the objective we want to achieve?

Citizens: That's easy. Our objective is to provide a primary education for all our children.

Teacher: That's really what you want to achieve?

Citizens: Yes, if it is possible.

Teacher: Good. It may or may not be entirely possible--we'll see.

Citizens: Does your systems approach allow us to think now of different ways to achieve this objective? We want to get started.

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*Note: The Citizens, long concerned about their children's learning, knew very well what they meant by "primary education." They had spent years in developing a set of comprehensive educational objectives for primary education, and children who achieved these objectives had, in a very real sense, received a primary education.

Teacher: If you want to do so, of course you can. But what materials are you going to use to build your alternatives?

Citizens: Materials?

Teacher: Resources. If you are going to build a house, you must do it with the materials and resources that are available to you. What resources are available to you to help you achieve your objective of providing a primary education for all your children?

Citizens: Well, we do have many school buildings already.

Teacher: Anything else?

Citizens: We could use community buildings of many kinds.

Teacher: Yes?

Citizens: Villagers can build different kinds of structures of thatch and bamboo for very little cost.

Teacher: Are villagers resources?

Citizens: We suppose they are.

Teacher: Can they do things other than buildings to help achieve your objective?

Citizens: They could give some help to teachers.

Teacher: How?

Citizens: With some guidance, they could help teach special skills. Carpenters, farmers, health workers, housewives, fishermen--all could teach children important skills.

Teacher: Anything else?

Citizens: A number have finished primary school, and they could help in teaching reading and arithmetic.

Teacher: Who else might help?

Citizens: Older brothers and sisters. Actually any other student could help younger ones with some guidance.

Teacher: We keep talking about teaching rather than learning. Are there other ways that children can learn without being taught?

Citizens: A lot of youngsters can learn things without a teacher. They can learn by themselves.

Teacher: Educators call that self-instruction. Are there other ways to learn?

Citizens: Children could help each other. Two could study together, or small groups could be organized to learn together.

Teacher: Educators have words for that kind of learning, too. They call it "buddy system" or "peer-group" learning. Have you exhausted your resources?

Citizens: Parents could help.

Teacher: What if they are illiterate?

Citizens: Well, if they knew what their child was supposed to be doing, they could make sure that he does it. If the opportunity for a good education were made available, it could be the parents' responsibility to see that their children take advantage of the opportunity.

Teacher: What about money?

Citizens: It's strange that we first spoke to you about money and have forgotten to think of it as a resource. But it is also a constraint because it is limited.

Teacher: But there is money?

Citizens: Yes, but some 80 to 90 percent of it now goes for the cost of teachers--their salaries, training, retirement, and the like.

Teacher: So?

Citizens: We have been talking about learning rather than teaching, haven't we? Perhaps if we forget our traditional ideas of teachers and teaching, we can consider money more as a resource than as a constraint.

Teacher: You are about ready now to think about alternative ways for all your children to have a primary education. But, before you get started "brainstorming" for alternatives, how will you know when you have a good alternative?

Citizens: It would be a good one if it would permit all our children to get a good primary education.

Teacher: What's that?

Citizens: Even though we may find a way to educate all our children--twice as many as now--we don't want them to learn any less than now. We have already made a thorough job of saying that we want our children to learn. We could measure how well they achieve these objectives.

Teacher: Anything else?

Citizens: What about our constraint on money? It has to be able to educate more children for the same amount of money--all children, if possible.

Teacher: Would you be satisfied with that?

Citizens: Of course.

Teacher: It seems that you have established your main criteria. First that your children learn and second that more children are given that chance. Now, with all this--your problem, objective, resources, constraints, criteria--is there any way that you can achieve your objective?

Citizen A: No more schools!

Citizen B: Television.

Citizen C: Radio.

Citizen D: Programmed instruction.

Citizen E. Stop! It seems to me that it would be better if we thought of ways to use our resources better.

Citizen F: And if we included what we know about better ways to learn without teaching.

Citizen G: We could use a lot of self-instruction. That is, without a teacher.

Citizen H: There are ways that allow children to learn better and faster. That would reduce the amount of time that a teacher must give to one class. Maybe she could teach two classes.

Citizen I: One thing would be a system that uses all resources--radio, self-instruction, older kids and community members tutoring and teaching, and the like.

Citizen J: But how could you manage such a big variety?

Citizen K: We could train teachers to manage, and we could provide them with a system to make it easy to manage.

Citizen L: Maybe it would be better if children were to learn without a teacher--doing all these things--for only one week. Then they could spend the next week with the teacher who could make sure that they had learned and help them if they needed it. She also could teach them things that they couldn't learn any other way. I'd call it the "In-school Off-school Approach."

Citizen M: Not bad. But what if we could do two things. First, make learning faster, i.e., reduce the time that it takes children to

learn something. There must be modern ways to do that. Second, if we could reduce the amount of time that a teacher has to spend in class through self-instruction or kids teaching kids, or whatever, I bet that we could cut down the time a child has to spend at school. Maybe kids could go only two hours a day or three days a week. I'd call this "Reduced Instructional Time."

Citizen N: Again, not bad. But I'd favor a way that makes use of all community resources (tutors, aides, persons who could teach special skills) and that makes use of what is known about ways to learn without a teacher (self-instruction, children learning together, older students teaching younger ones, parents monitoring and guiding their children), and I'd build in a good way to know how well a child is learning so that older children could help on things that are difficult. Then I'd have the teacher manage all this for many, many children. She could do this if she doesn't have to teach. I'd call it "IMPACT" because it would mean Instructional Management by Parents, Community, and Teachers.

Citizen O: These are three good ideas. Why don't we try them out? Maybe we could learn from each of them and come up with a better solution.

And so they did. One was ISOSA (In-School Off-School Approach), which is under tryout in eight locations in the Philippines. One was RIT (Reduced Instructional Time), which was having very promising results in Vietnam during the time the INNOTECH center was there. The third was IMPACT, which is being tried out in the Philippines and Indonesia and is the topic of the present report.

Citizen P: Where is the Teacher?

Citizen Q: He went to sleep a long time ago.

Citizens: No matter. He didn't help us very much anyway. We had to do all the thinking.

PREFACE

Project IMPACT is a program of SEAMEO--the Southeast Asian Ministries of Education Organization. SEAMEO has established regional centers in six of its eight member countries. Each center is devoted to a different aspect of education, e.g., science and mathematics, tropical medicine, English language, tropical biology, and agriculture. The Regional Center for Educational Innovation and Technology (INNOTECH) is responsible for the planning and conduct of Project IMPACT.

Project IMPACT is important. If present developmental efforts succeed, we may have the means not only to provide for universal primary education in Southeast Asia, but also to help solve some of the problems attendant to the rising costs of education--problems existing in all parts of our world. Although IMPACT represents a possible solution to the problem of educational costs, those engaged in its development have not forgotten that the focus of the system is children. Children are warm and loving things that grow into adulthood all too soon. The project staff share the belief that it is their duty as educators to prepare IMPACT children for an adult life that is both productive and satisfying.

I am able to write this report on IMPACT because I had the good fortune of watching it develop from early 1973 until May of 1975. But this close association with the project has made it difficult to write an unbiased report, and I may occasionally strain to see signs of potential success. My own high expectations for IMPACT may also at times cause me to be overly critical of some directions that are being taken by my friends who conduct the field work.

ACKNOWLEDGEMENTS

IMPACT is funded primarily by the International Development Research Centre of Canada.

It was Donald Simpson of IDRC who first encouraged the Regional INNOTECH Center to develop the research plans that have resulted in IMPACT. IDRC, through both Mr. Simpson and Miss Carol Sissons, has continued to be both supportive and understanding.

The Regional Economic Development Office of USAID, in its support of INNOTECH activities, has contributed greatly to IMPACT by providing for regional seminars, professional staff salaries, and consultants.

The Secretariat of SEAMEO is SEAMES. Officers of the Secretariat have provided encouragement and guidance throughout the development of IMPACT as a research project. At the Regional INNOTECH Center, all professional staff members have made inputs at various stages of IMPACT development. Three persons, however, have been most directly responsible for the project's successes to date: Dr. Winarno Surakhmad, Mr. Orlando Claveria, and Mr. Michael Nathenson.

The Governments of both the Philippines and Indonesia contribute more than $30,000 per year through the provision of base salaries of professional field staffs, office space, and other expenses. Dr. Aliño of Cebu Normal College, Philippines, and Drs Paramanto, IKIP Solo, Indonesia, have graciously provided office facilities for the IMPACT field staffs.

Direct guidance and support for field operations has been fully provided by National Steering Committees.

In the Philippines:

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Dr. Liceria B. Soriano, Director of Public Schools
Dr. Aurelio Tiro, Superintendent, Cebu Division and Regional Director, Central Visayas
Dr. Bonifacio Sibayan, President, Philippine Normal College

In Indonesia:

Dr. Setijadi (replacing Dr. Santoso), Director of the Office of Educational Development
Drs. Sumitro (replacing Drs. Jusifhadi), Office of Educational Development
Drs. Parmanto, Acting Rector, IKIP, Solo

Regional organizations, donor agencies, and host governments have provided the support for IMPACT, but it is the field staffs in the Philippines and Indonesia who are giving life to the concept. They are the educators whose dedication to and concern for the education of children in Southeast Asia will truly make an "impact" in that region. Project IMPACT is their project.

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These are the people who staff the IMPACT field sites in the Philippines and Indonesia. The future of IMPACT is in their capable hands, and I wish them the success that they deserve.

Acknowledgements are at times insufficient. This is one of those times.

We don't often use the word "seer" these days, but in the late 60s a "seer" wrote these words:

> The reality of today is that breakthroughs have been achieved in the technology of teaching and learning which demonstrate quite clearly that there are infinitely better, more efficient, and more economical means of achieving instructional objectives than were available even ten years ago. There is no reason why Asian education should be tied to approaches which have been made the norm only by history and tradition. Systems and methods consistent with Asian resources and directed specifically to Asian needs can, should, and inevitably will be developed.
>
> What are the implications of these breakthroughs for educational development in Southeast Asia? What would be the effect of tossing aside these age-old assumptions? Is it indeed necessary to have a teacher for every 30-35 pupils? Is it necessary to spend 6-8 years to achieve the instructional objectives which are set for the elementary cycle? Is it necessary to house the learning process in the expensive physical plants which are designed to serve the one teacher to every 30-35 pupils approach? These are not simple "just suppose" questions. They are questions which can

be raised legitimately in view of the alternative approaches and solutions which are now above the horizon and which have never been tried seriously in Asia.

With exercise of just a bit of imagination, one can pass from questions about assumptions to a possible future where the objectives of basic education (literacy skills, basic computational skills, simple community living skills, and so on) are implemented and achieved right in the home and village by use of simple, inexpensive, self-instructional packets of materials, coordinated with radio broadcasts which come into either the home or perhaps a community center. No school, as we know that institution today, may be required. A completely new kind of institution may emerge replacing both the physical facilities and the concepts which now separate education into elementary and secondary cycles.

These institutions of the future will possibly be community education centers for self-learning, where persons of all age groups will gather to utilize modern learning resources, largely self-instructional, requiring a minimum of professional supervision, and achieving what the educational system is expected to achieve at a fraction of the cost at greater efficiency, and in considerably less time than the twelve-year norm established by tradition for the elementary/secondary cycles.

One can try to set these imaginative wanderings aside as being the science fiction of educational technology, but it must be remembered that in the physical sciences we have seen in our generation the leap from the science fiction of yesterday to the space exploits of today.

These words of Robert Jacobs described the IMPACT concept some five years before it was begun. I would like to dedicate this report to Jake, not only because of his prophetic ideas, but also because of his continuing concern and support of the Regional INNOTECH Center and Project IMPACT.

There is a second dedication. INNOTECH was begun in 1969 in Bangkok, was hosted by the Government of Singapore from 1970 to 1973, and was transferred to Saigon in 1973. In that latter city the research and training programs of the Regional Center matured and were providing a service to all eight countries comprising the Southeast Asian Ministers of Education Organization (SEAMEO). On 30 April 1975, more than a quarter of a century of conflict ended for Vietnam with the surrender of Saigon. All materials and equipment were left in Saigon; only ten of the Center's 70 staff members left with the Center. The report is also dedicated to Mr. Pham Van Cung, the INNOTECH Director, and his Vietnamese staff who remained in their country. INNOTECH was their Center and IMPACT was their project.

INNOTECH has moved to temporary quarters in Thailand and is now making plans for permanent establishment in another Southeast Asian country. The idea of INNOTECH and the faith of Southeast Asian countries in that idea, continue.

TABLE OF CONTENTS

Discourses. i
Preface vii
Acknowledgements. viii
Introduction. 1
The Problem 2
Impact as a Possible Solution: An Overview 3
Impact as Viewed by Participants. 8
An Instructional Supervisor. 8
A Beginning Student. 8
An Instructional Supervisor. 10
An Older Primary Student 11
An Instructional Supervisor. 17
A Tutor. 18
An Instructional Supervisor. 22
A Parent 23
An Instructional Supervisor. 24
Out-of-School Youth. 25
An Instructional Supervisor. 25
A Community Leader 26
An Instructional Supervisor. 26
The Minister of Education. 27
A Summary of the Impact System. 34
Summary of Field Progress to Date 37

INTRODUCTION

There is an educational experiment going on in Southeast Asia that may well turn out to be one of those simple ideas that could change our world. The experiment is called project IMPACT, and it is being carried out in a total of nine villages in Indonesia and the Philippines. Its intent is to provide a quality primary education at a substantial reduction in per-pupil costs. The IMPACT system will be available for all to see in 1978 assuming no interruption in its development plan.

The increasing costs of education plague educators throughout the world. No country can escape the constraint of educational cost. The typical response to increased costs has been to reduce educational services of various kinds, hopefully without reducing what is learned by our children.

Educators in Southeast Asia, however, have re-examined the process of primary education and have taken a fresh approach which holds great promise for education in all countries. They have abandoned Western-imposed concepts of traditional education which, perhaps unknowingly, have equated learning with teaching. Instead they have focused their attention upon children's learning per se. They have examined the components of educational costs and, having found that 80-90 percent of their costs are associated with teachers, have made use of the full range of non-teacher resources to aid in student learning. These resources include parents, community members, and older students. Finally, they have utilized the results of educational research and have adapted a variety of non-teacher learning methods including self-instruction, peer-group learning, ungraded progression, skill training by volunteers in the community, and programmed teaching and tutoring by older students.

By marshalling available resources and techniques, they anticipate a substantial increase in student-teacher ratios in the next several years--perhaps to as much as 200 students per teacher. These savings in teacher costs can be used to provide learning opportunities for those not reached by the present system and to improve the quality of learning all along the line.

No component of this approach is either entirely new or untried, be it self-instruction, use of community resources, or older-student tutoring. What is new is the <u>management</u> of these various components--their integration into a <u>total learning system</u> directed toward the achievement of stated objectives. Thus the approach has appropriately been given the title Project IMPACT, an acronym for Instructional Management by Parents, Community, and Teachers.

THE PROBLEM

Education is given a high priority by all the countries in the Southeast Asia region. The proportion of the national budget devoted to education reaches as high as 35 percent in some of the countries and in all of them forms a substantial portion of national expenditures. Even with this expenditure, however, less than 50 percent of school-age children are able to complete a primary education.[1] Schools are typically crowded, often with four children sitting at a two-student desk. Textbooks are in such short supply that the usual practice is for students to copy what the teacher writes on the chalkboard. Many children are required to learn a language of instruction different from the language they use in the home. Most youngsters begin grade one, but the dropout rate through the primary cycle is alarmingly high. Absenteeism also is extremely high, and few of those starting primary school are literate at the end of grade three. Parents, particularly in rural areas, often do not encourage their youngsters to complete a primary education. Even should all students desire to attend the five to seven years of primary school, there are not sufficient places for them. The money is simply not available to build more schools, print more text books and train and pay more teachers to accommodate such enrollment.

Simply put, it is not feasible with existing resources to expand the traditional system of education to accommodate the additional children who are not now in school. If a solution is to be found, it is obvious that the traditional system will have to be either abandoned or greatly altered.

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[1]This percentage varies widely among the countries in the region. The small affluent, and urban country of Singapore, for example, has essentially universal primary education, while in Laos less than 30 percent of children of school age are in school.

IMPACT AS A POSSIBLE SOLUTION: AN OVERVIEW

The IMPACT system as described in the pages which follow is in a sense imaginary. But it represents a projection of the project's design based on results and progress to date. The data and the accomplishments so far are sufficiently encouraging to permit a prediction that a system closely akin to the one described will be observable by 1978 (the demonstration year of the experiment). It is believed that this approach in reporting will indicate more clearly the potential of IMPACT as a possible solution to the problems stated above than would simple re-statement of progress to date--the latter having been reported already on a weekly basis. Changes undoubtedly will be made between now and 1978--as they have been made since IMPACT was first conceived in April 1973--but it is not likely that these changes will alter significantly the overall product described in the following sections.

IMPACT Reduces the Number of Trained Educators

As a start, let us view a cluster of ten contiguous villages. Each village serves some 200-400 primary age students, and each has approximately 10 teachers, including a principal. Two district inspectors serve the ten villages. Presently, therefore, there are 102 school personnel serving approximately 3,000 primary students.

IMPACT has only two teachers per village, including one serving as principal. The title of teacher has been changed in IMPACT to "instructional supervisor," to better describe a change in functions under IMPACT. Two educational coordinators in the 10 villages and three itinerant specialists travel from village to village to teach such subjects such as art, music, gardening, and religion. There is also a District supervisor. For the 10 villages, the IMPACT system utilizes 26 school personnel...a 74 percent reduction in the number of professional educators. Two secondary school students and two parents serve voluntarily each day in every village, acting as aides and tutors. Each person helping out at the center serves only one day each month.

Community Learning Centers Replace Schools

Although existing school facilities are used when available, the term "school" has been dropped in favor of "Community Learning Center." This new designation not only helps to diminish the idea of teacher-led school classes, it also more aptly describes a center in which the whole community participages and which encompasses all aspects of community education. On the grounds of the center are some 30 to 40 open thatch and bamboo structures, each with a table, benches, and a chalkboard. They have been built of local materials by parents at a cost of about 20 cents each. They are called "learning kioskos" and are used by students for individual and group studies of various kinds.

Student Learning Activities are Adopted to Individual Needs

Grouping Patterns. Beginners, in small groups of six to eight are learning reading and numeracy under the guidance of older primary students. Some of those who have learned basic reading skills are studying self-instructional materials. Often two friends are studying together, questioning and explaining to each other to make sure that each has complete mastery. And, more often, learning takes place in small groups of three to six students, each student taking turns in leading the group. A few of the less able students are being helped on a one-to-one basis by older students. Secondary school students are giving post-tests to upper-level primary students and are giving remedial help to those with specific difficulties. A number of students are away from the center; they have gone in small groups to learn from community members such skills as irrigation, poultry raising, hygiene, and sewing. Still others are away from the center because they are ill or have to help their parents at home, but they have not ceased to learn... they have agreed (contracted) with their supervisor to complete a given set of self-instructional materials, to return to the center for their post-tests and remediation and to pick up new materials. Occasionally, out-of-school youth and adults are seen at the center, they, too, are taking part in learning activities by studying at home using learning materials from the center.

Flexible Learning Roles. The IMPACT system allows for self pacing (or peer-group pacing) so that youngsters can progress according to their own abilities. The more able students are not held back as in the old days by the need to accommodate the "average" class level; now they can proceed as fast as their abilities allow them. The same system gives the less able students the freedom to go at their own somewhat less rapid pace. The lock-step progression of the traditional school has been almost entirely abandoned, and some children are now completing the six-year curriculum in five years, while others are taking up to eight years. But mastery learning is assured, whatever the individual pace.

Incentives for Learning. With such flexibility in learning rates, IMPACT places a fairly heavy responsibility on students (and their parents) to pace themselves according to their abilities. A system of weekly contracts between students and their instructional experience helps to insure accommodations of individual learning rates. Students propose to the supervisor their goals for the coming week, including what learning activities and post-tests they will accomplish. The supervisor reviews their proposals and, in discussions with the students, may alter them slightly in keeping with his/her knowledge of each student's ability and in an effort to challenge each child without overloading him. The two then sign a contract. Students completing their contracts receive recognition and rewards such as the loan of comic books or the accumulation of tokens for future awards. Each student's rate of contract completion, whether ahead or behind schedule, will influence the supervisor's judgment about the amount of learning to include in later contracts.

There are also a number of "stations" within the learning center containing materials which are both instructive and enjoyable. One such station is

called the "brainbuster," and it contains numerous kinds of puzzles and problems. When a child solves a given puzzle, he marks his success on a program chart at the station. Participation in activities such as these is earned by successful completion of a given learning task, i.e., succeeding in a post-test.

Once each hour, children take a break from their studies to care for their gardens or to join in group games or singing. This kind of break has been found helpful in avoiding boredom, and in keeping up enthusiasm.

When IMPACT was first begun, a large progress chart was kept in each Center. It displayed, for all to see, the learning achievements of each student. It seemed to have a motivating effect for some time, that is, until differential rates of student learning became more evident. The more able students each week widened the gap between their achievements and those of the less able. The chart continued to have a positive effect on the more able, probably motivating them to further efforts. But the effect on the less able was tragic; try as they might, they could not keep up. Absences from the Center, rare at the beginning, began to increase, and the rate of learning among the less able decreased. For a time, the chart was abandoned in favor of individual records to which only the student and the supervisor were privy. However, once the system of contracting was begun, the progress chart was instituted once again for all to see--but now the chart displays achievements in terms of contracts completed--and the less able now are abreast of their higher achieving peers. And each can now point proudly to his or her own achievements.

Parental Responsibility. Parents are informed (via take-home slips) of their children's contracts each week, what each child must do to fulfill the contract and, at the end of the week, how their child fared in relation to his contract. Parents, whether literate or not, have been oriented to accept responsibility for the learning of their own children. Periodically during the week they review learning progress with their children. If they, and their children, feel that progress has been a little too slow, they encourage their children to spend more time studying at home and to visit their tutor more frequently. They may, for a time, also relieve their children of some of their home chores. (In the early days of IMPACT, parents frequently complained to the supervisor that their children were studying too much at home and were failing to do their chores. Parents, for whom this wonderful situation was a problem, were encouraged to establish work and study schedules for their children.) Parental involvement has been one of the keys to the success of IMPACT, and it is also one of the more evident ways in which IMPACT differs from our traditional schooling system in which the prime parental responsibility is typically to make sure that the child goes to school--where learning presumably takes place.

Tutoring. Secondary school students take turns acting as tutors at the Center. In addition, however, each child has a tutor available to him at or near his home. Secondary school students, primary school graduates, brothers, sisters, parents, and neighbors have volunteered as tutors and have received special training. Each has some two to four primary students under his or her tutelage, and each devotes about 30 minutes each day, having worked out schedules to fit his own and the primary student's

convenience. Although children go to tutors for help with specific difficulties, the main job of tutors is to administer posttests and to explain and remediate learning difficiencies as indicated by the tests. When a tutor is satisfied that a student's achievement on a given segment of learning is adequate, he signs a slip to that effect which the student takes to the learning center.

IMPACT Learning is Modular. Learning segments in IMPACT are called modules. They are the sequential guilding blocks that make up the IMPACT curriculum. A module can take many forms--self-instruction, peer-group learning, instructional games, practice in applied skills--a variety of non-teacher learning activities. Whatever form a module takes, it usually has the following characteristics:

...clearly stated objectives and instructions for learning
...short learning sequences followed by evaluation exercises and feedback
...review and sufficient practice
...posttests (and remediation provided by tutors)

Since IMPACT is ungraded, progress is indicated by the number of modules completed by a child. For the complete primary curriculum there are some 1200 modules, or about 200 per year--approximately 35 each year in a given subject. Children no longer refer to themselves as second graders or fifth graders; they simply say what module they are on in each subject.

Mastery Learning is Achieved by a System of Evaluation and Remediation. Modules are made up of about five lessons. Each lesson has its own objectives and self-administered posttests/feedback/remediation. The final lesson in a module is a comprehensive review to ready a child for the module posttest. Modules generally take from three to five hours to complete, and youngsters usually complete one module a day. With 150-200 students under her care, no supervisor could possibly administer that many posttests and keep up with her other duties as well. Module posttests, therefore, are the main responsibility of tutors (whether at the center or at home). Each module is accompanied by instructions to tutors on how to administer posttests and, of greater importance, how to overcome learning deficiencies. Because of the built-in self-evaluation of each module, it is rare for a child to completely fail the module posttest. Most typically each child passes the full posttest or has some moderate deficiencies. An important part of each tutor's training has been the art of positive verbal reinforcement--using such words as "good," a "good job" or "you're doing fine" whenever a child is successful and avoiding negative comments on failures other than "Let's go over page 3 together" or "This part is a little difficult; let's review it together." Ultimately it is the tutor's judgment that the supervisor relies upon in determining when a child has successfully learned a module.

In addition to using the information provided her by the tutor, the supervisor has a separate responsibility for evaluating and monitoring each student's progress. Five to ten modules in a given subject make up a "block" of some 25 hours of instruction. Just as the final lesson in a module provides a review of the content of that module, the final module in a block provides

a comprehensive review of the entire block. The review module is followed by a block posttest which is administered only at the center under the guidance of the supervisor. Block posttests usually are given by center tutors or aides, but test results are reviewed by the supervisor who then decides what, if any, remediation is necessary. Supervisors may themselves help children over some learning difficulties, or they may assign a tutor to do so. At the end of remediation, however, it is the supervisor alone who must judge whether a child has mastered all the learning in a given block.

The Center is Used by the Community at Large. The focus of IMPACT has been toward providing an educational opportunity for primary age children. However, the commitment of communities in support of IMPACT has led to the utilization of learning centers for other educational needs of the communities. Overage youngsters who had previously dropped out are now continuing their primary education through a system of individualized study and tutorials. Adult literacy training, health education, civic development courses, etc., form a cluster of learning needs--much of which is now modularized—takes place in the local center which has, in a very real sense, become the community learning center.

An overview such as the foregoing can do little more than provide a "feel" for IMPACT. As with many simple ideas, IMPACT becomes more complex as various pieces or components are fitted together. In the following section, this complexity will be conveyed by presenting IMPACT (of some future year) through the eyes of the various persons participating in an IMPACT system that has been adopted on a nation-wide basis.

The presentation is introduced by an instructional supervisor and contains reports by students, tutors, parents, and other community members. The last section is an "interview" with the minister of education of the country where IMPACT is being applied.

IMPACT AS VIEWED BY PARTICIPANTS

An Instructional Supervisor

I am Mrs. Cortez. I am one of two instructional supervisors at an IMPACT learning center. The two of us now manage--please underscore the word "manage"--the primary education of more than 300 youngsters in our village. Before I was trained as an instructional supervisor, I was one of ten teachers here, and we didn't have as many students as we now do, and now we call them learners instead of students.

I seldom teach as in the past because we are concentrating on learning rather than teaching. There are many IMPACT avenues for students to learn--self-instruction, peer group learning, tutoring and teaching by older students, teaching of special skills by community members--many ways to learn without my standing before a class with book and chalk in hand.

My job now is to manage (schedule, supervise, monitor, and so forth) these many learning activities. I love children and take pride in their achievements. When I was a teacher I tried very hard to help each child, but it was almost impossible to do so because I had to teach to some class average--a practice that led to boredom for some of the more able children and, sadly, to discouragement for the less able. Now, even with six times as many children to care for, I can see to it that youngsters of all levels of capability are given the attention they need. I work with parents and the community in the management of IMPACT learning. The system is truly Instructional Management by Parents, Community, and Teachers--IMPACT.

I think that the best way for you to understand IMPACT is to view the system through the eyes of others taking part in it. Although I'll interject a word or two occasionally, I want you to hear mostly from students, parents, tutors, and community members--those who both participate in and contribute to IMPACT learning. These reports have been compiled and edited after interviewing persons in a number of IMPACT villages. The first is by Felecia who only started at her center two months ago.

A Beginning Student

My name is Felicia. I am six years old and have been learning at the community learning center for only two months.

Each morning I wake up early and do my home chores very fast so that I can study before going to the center. Sometimes my father laughs and calls me his little professor because I like to learn so much. I don't mind because I know that he is proud of me. He is also happy with IMPACT; he and my

mother follow what I do very closely and are pleased with me when I bring home an achievement slip. I get a slip to take home every time I pass a post-test. If I have some problem in my learning, my parents either help me or make sure that my older sister or her friend, Inday, does. My grandmother cannot read, but she puts all my achievement slips up on the wall to show her friends. She is ashamed that she can't read and says that she is going to start going to literacy classes at the center. I hope she does because then we can read together.

My mother goes to the center, too. One day each month she helps my instructional supervisor, Mrs. Ortega. She keeps records, gives post-tests, and helps some of the students when they don't understand something. She also goes to the center to learn hygiene when the health worker comes to our village.

Learning is fun. Eight of us learn together in our own learning kiosko. My father helped build our kiosko out of thatch and bamboo. Mrs. Ortega let us name our own kiosko, and we call it the "Beautiful Princess." Mrs. Ortega also found a picture of a beautiful princess which we hung on the wall. Sometimes on the way to the center in the morning we joke about going to see the beautiful princess.

Every day at the center we learn one module. All students in IMPACT learn by modules, but I have looked at the modules of some of the older kids and they are very different from those we have. Ours are divided into five lessons. Each lesson is followed by practice exercises which help us be sure that all the "beautiful princesses" in our group understand everything in the lesson. We also have a 15 minute recess after each lesson, and we play games, sing songs, draw pictures, or take care of our gardens.

The very first lesson each day lets us know everything that we are going to learn in the module for that day. We call this part "objectives." The last lesson each day lets us review everything we have learned before we take our post-test. If one of us has a problem on the post-test, either a tutor or our programmed teacher* sits down and explains things till we understand.

Older students don't have programmed teachers because they already can read, and their modules are different. Since we have just begun learning to read, we need the help of programmed teachers. Students who are in the last sets of modules at the center are our programmed teachers. Each one spends one day every two weeks teaching us. I have a favorite teacher, but I'd better not say who it is.

Most of the older students who are about to finish the system also spend about 15 minutes with us each day asking post-test questions and helping us understand anything we miss on the post-test. When they do these things each day, they are called tutors, and each one of us at the "Beautiful Princess" kiosko has a tutor. My tutor is named Inday, and she is a friend

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*Programmed teaching is a technique developed by Dr. Douglas Ellson, Indiana University, and adapted by the INNOTECH staff for use in IMPACT. It is an approach which permits "unqualified" persons to teach specific lessons to small groups.

of my sister and lives near my house. Sometimes I ask Inday to help me when I study at home. Inday signs the achievement slips I take home to my parents and, of course, to my grandmother.

Programmed teachers, according to my father, aren't the kinds of teachers he had when he went to school. His teachers were grownups, like Mrs. Ortega, who had been trained at a college for two years to teach all subjects and to make up their own lessons. Our programmed teachers are still learning at the center, but they have been taught how to follow a lesson program very carefully. They teach us one thing at a time and then ask each of us questions to make sure that we all understand. They seem pleased when I answer a question right--that makes me happy, too. They don't scold me if I am wrong, but I can be sure that they will ask me the same kind of question later until I do answer right. Then they are pleased. Learning seems very easy this way because the questions are not very hard, and you always can give the right answer before the lesson is over.

Our programmed teachers sometimes write on the chalkboard, and sometimes they use a green flannel board where they put up letters or numbers or pictures. At times they ask us to move letters on the flannel board to show that we understand. Each of us also has a workbook for each module with about one page for each lesson. I can keep the workbook to study at home. My father made a shelf where I keep all my workbooks, and I now have 20 in language and 10 in mathematics.

When we have language modules, the programmed teacher uses a cassette recorder so that we can hear people who can speak the language very well. Usually we repeat what they say and then listen to them again. Mrs. Ortega says that the center won't use recorders so much next year because most of our lessons will be on the radio.

I guess that's about all except that Mrs. Ortega gives each of us what she calls a block post-test every two weeks which covers all the modules we have learned in that time. Sometimes she asks some older students to help us if we have problems on the block post-test.

When I grow up like Inday, I want to be a tutor, too.

Instructional Supervisor

There are now a large number of "Felicias" who are experiencing the positive rewards of learning achievement. May their childlike enthusiasm for learning new things never lessen!

The first two years of a child's learning are pretty well scheduled. Although some of the programmed teaching groups advance a little faster than others, it takes generally about two years to get the fundamentals of literacy and numbers. In our concentration on these two skills, however, we have not neglected other subjects; the IMPACT materials have integrated other subjects into the language and mathematics modules.

An instructional supervisor's job for these beginners is to:

- schedule programmed teachers several days in advance so that they have sufficient time to study their materials;
- prepare the appropriate materials and workbooks so that each programmed teacher has them for his or her group;
- visit each group periodically to make sure that lessons are proceeding smoothly;
- monitor each student's progress and assign older students to give special tutoring to those who are falling behind;
- meet with programmed teachers regularly in an effort to upgrade their skills;
- maintain a fair system of incentives for programmed teachers (see the next report by Ali who is a programmed teacher.);
- maintain records of all children (with the help of unpaid community volunteer aides); and
- report deficiencies in the program to the Ministry through our educational coordinator, who serves five centers such as my own.

In all this I am aided greatly by the systematic routines which IMPACT has established for all centers. But I am not just a record keeper simply following a routine; IMPACT allows me, as never before, the freedom to care for the individual needs of students.

The next report, by Ali, not only describes what he is doing in his fifth year at the center, it also tells of some of his experiences in earlier years.

An Older Primary Student

Hello. My name is Ali. Welcome to our village.

I have been learning the IMPACT way for four years and should be able to complete all my modules in about one more year. My favorite subject is mathematics. I was afraid for a while that I would finish all the mathematics modules long before I could finish the other subjects, but Mr. Sutjipto, my instructional supervisor, said that I should not worry too much because there are plenty of "enrichment" modules in mathematics for those of us who want to learn more. My friend Sutanto and I look forward to doing the enrichment modules together.

For the past year or so, Sutanto and I have been studying mathematics together. We sometimes have a race to see who can finish the module first and pass the post-test without making any errors. When we study math

together, we use one of the small kioskos. We have fun doing problems on the chalkboard and often make up our own problems.

I guess that Sutanto and I are about the best students at the center in mathematics. Very often Mr. Sutjipto asks us to help some of our friends who are having trouble with a math module. We usually do this in one of the larger kioskos where they are learning together in what Mr. Sutjipto calls peer-group learning. They don't often need help because, when they learn together, someone in the group usually understands and can explain to the others. Sometimes Mr. Sutjipto also asks me or Sutanto to spend some time with only one of our friends who is having a tough time understanding one of the mathematics modules. He calls it "peer tutoring." I guess we must all be "peers" at the center.

Monday afternoon is contract time. That is when I tell Mr. Sutjipto what modules I plan to finish by noon of the following Monday. He usually agrees with my plan, and we both sign a contract which I take home to my mother and father so they will know what I have to do.

Sometimes Mr. Sutjipto asks me to include a practicum module in either social studies or applied skills. This is his way of getting a large enough group together on the same practicum module so that he can schedule the time of one of the grownups in the village to help. Last week ten of us worked all day with Mr. Jasin building a catfish pond at his farm. We will take turns feeding the fish until they spawn. Then we'll transfer the baby fish to another pond and feed them until they are large enough to eat. Mr. Jasin says that there will be enough fish so that we can have a "fish fiesta" at the center.

While we were working with Mr. Jasin, he made sure that we all knew not only how to do the different things, but also why we were doing them. He asked each of us enough questions to make sure that everybody had completed the module before he signed our achievement slips. We learned a lot from Mr. Jasin. He thanked us all for our help in building his new fish pond.

Sutanto and I contract for the same mathematics modules, but we usually contract differently in the other subjects. He is better than I am in language so he can contract for more in that subject. I guess that I'm a little better than he is in science.

In all my subjects other than mathematics, I study with my peer group. On Monday morning we make sure that all of us have completed the contract. Then we decide what modules we want to contract for during the next week. There is a boy in our group who is very smart in science, and he can go much faster than the rest of us. He contracts for science by himself, but contracts with the group for his other subjects. Another boy who was in our group was very good in all his subjects, and I think that we held him back too much. Mr. Sutjipto let him join another group that is going a bit faster than the rest of us. He still likes to come back and help us out sometimes.

On Monday noon, Mr. Sutjipto fills out the progress chart, and we all gather around him to see how everybody did. The chart doesn't show what

modules we have completed (that kind of chart is kept separately for each of us, and the only people who can see it are Mr. Sutjipto, our tutors, our parents, and ourselves).

The big progress chart has a blue star beside our names for every contract we complete, and every person with a blue star can then choose a comic book to take home for the week. We always have plenty of comic books because Mr. Sutjipto trades back and forth with other centers nearby. I can sometimes earn a gold star by doing more modules than I contracted for or by volunteering to give extra time helping tutor younger children. A gold star earns you two comic books. It also makes your parents very happy.

Mr. Sutjipto also is very happy when all his students complete their contracts. I know why he is an instructional supervisor--he is very, very smart. In the first place he makes sure that our contracts keep us very busy, but he also makes sure that we don't contract for too much. I usually contract for two modules in mathematics (with Sutanto) and for four other modules (with my peer group). Once, though, Mr. Sutjipto taught us a good lesson. Our group contracted for eight modules, and by that Friday we still had three to go. Let me tell you that we all worked that weekend, and we made our tutors help us, too. On Monday morning, Mr. Sutjipto had a tutor help us some more. We finished, but we also learned not to take on too much.

I said that Mr. Sutjipto is smart. Do you know why he makes Monday noon the time for finishing contracts? Well, he does it on Monday so that if some of us are a little behind on Friday, he can write a note to our parents and tutor to make sure that we study more on the weekend. He also can check with us on Monday morning and can give extra help to those who need it to complete their contracts. Mr. Sutjipto is pretty smart all right.

We learn with modules, and it takes us sometimes three hours and sometimes five hours to complete one. Our modules can be used for a student to study by himself (we call this kind of learning "self-instruction"), or they can be used to study together with other students in peer groups or with a single friend, as Sutanto an I do. When Sutanto and I learn together, we call it the "buddy system."

There are many reasons why modules can be used either to learn by oneself or with others. Some students would rather study some subjects alone, and we all do when we are sick or have to stay home to help our parents. A few older boys and girls who had quit school before are now learning again; they study modules at home. When I have to stay home, I get my parents' approval to study a few hours each day and to see my tutor for post-tests and help. I still contract, but not for so much as when I spend full time at the center.

But it becomes awfully boring if you study alone all the time. Learning with your friends is a lot more fun. Sometimes I think we have so much fun that we forget to learn, but I guess we do learn because we always complete our contracts.

Each module has about five lessons, and we take turns being "student leader" of our peer group. When it is your turn, you lead for one lesson. Some of us make better leaders than others, but we all join in anyway so it doesn't make much difference. After we had completed about half of the modules at the center, we were taught how to be leaders by older students, most of whom were about to finish the system, as I am now.

Each module starts out with objectives called "What We Will Learn." The leader reads the objectives out loud, and sometimes others in our groups have to help him if he misses a word. Most modules also tell us "Why This Module Is Important" so we will get an idea of the reasons for learning it. A few also have a sort of a pretest which is called "Are We Ready?" The leader asks the pretest questions and calls on different kids in the group to answer them. We usually talk about the answers, sometimes using the chalkboard to help explain our ideas.

A lesson in the module repeats the objectives for that lesson. The leader then reads the lesson, and we discuss and explain to each other until we all understand. In the lesson itself are many "self-evaluation questions" which we take turns answering. The answers to these questions are called "feedback" and are given on the next page in the module. This feedback is important so that we can all be sure that we understand. A long time ago we learned that we don't learn as well if we look at the feedback before we answer a self-evaluation question. We seldom cheat ourselves this way any more.

At the end of every lesson is a longer self-evaluation test. We each do this test alone and then score each other's papers using the feedback page. Usually we all do everything right, but sometimes some of us make mistakes. That is when being part of a peer group helps because we can explain things to each other.

The last lesson in a module is for review of everything in the module. Many times this review uses what we call "flip cards." These are cards with questions on one side and answers on the other. We pair up and use a buddy system to review by flip cards.

When we are sure that we can pass the module post-test, we go to a tutor for the test. Each of us does the test alone so that the tutor can know which of us, if any, needs help.

Don't get the idea that post-tests are always questions on paper. Sometimes we have to show the tutor that we have learned to do something--like put together a flashlight or pronounce new words in the national language.

Tutors are older people who already have finished a primary education. Sometimes they are parents or other people from our village, but mostly they are high school students. There are no full-time tutors; each spends one day a month at the center. We also have tutors near our homes who spend about a half-hour each evening helping us. So, if we finish a module at the center, we take the post-test there. But if we finish it at home, we can go to our tutor there.

The tutor checks what we do in the post-test, often asking us other questions to make sure we have really learned the module. If one of us has a problem on the post-test, the tutor sits down with him and goes over the part of the module which he didn't understand. When the tutor is sure that a student has learned a module, he signs a module achievement slip which we take to the center and to our parents. The tutor also marks our achievement in our individual records.

Most of us don't have problems on the post-tests because we have learned so well from the modules. Tutors spend most of their time with kids who are having problems learning.

When we pass a module post-test, we are allowed to spend a half hour, if we want to, doing something fun at one of the "stations" in the center. The station I like best is called the "brain-buster," and it has problems and puzzles that are fun but really bust your brain. Mr. Sutjipto also makes sure that we don't spend all our time learning modules; we take a break for 15 minutes every hour to work in our gardens, or do art work, or sing songs or have physical education. I am growing a new kind of yellow bean in my garden. I have eight plants and made the frames myself for the beans to climb on. We take turns carrying water for the gardens.

One of the toughest things we have to do is called a "block post-test." In one subject, Mr. Sutjipto has put together five to ten modules into what he calls a "block." All the modules in a block are more or less about the same thing. And the test we take is a lot longer than the module post-tests. I guess that it covers everything important that we learned in the modules.

The block post-test could be a lot tougher if we didn't have review modules. These are the last modules in the blocks, and they let us review everything in other modules. Mostly we use the buddy system and flip cards for this review. And we get to keep the review modules rather than turn them back to the center as we do with the other modules. (There are only about five of each of the other modules at the center, and it is important that we turn them in as soon as possible so other students can use them. We are careful not to mark on the modules themselves; we do all of our marking on separate answer sheets.)

After we take a block post-test, Mr. Sutjipto himself checks what we have done rather than having a tutor do it. I suppose that he wants to make sure himself that all his students are doing O.K. If he finds someone having trouble on the block post-test, he may ask another student or a tutor to explain things. He says that this explanation is for "remediation." Sometimes he remediates a student himself if he has time. Even after the remediation, Mr. Sutjipto will ask some questions to be sure we have learned. As I said, block post-tests are tough.

Did you know that I am a tutor, too? I tutor younger kids who are about half way through their primary education at the center. As a tutor, I know one reason why Mr. Sutjipto is so very strict about the block post-tests. If the children we tutor don't pass the block post-test, Mr. Sutjipto has a meeting with us who have been doing the tutoring to explain that we may not have been careful enough or didn't take enough time with our students

in making sure that they understood each module in the block. I know that he is right because the couple of times that I was too easy on one of the younger children, thinking that I was helping him complete his contract on time, the boy had problems on the block post-test.

Mr. Sutjipto has a system which lets tutors know when they are doing a good job. He scores each tutor for the contracts his students have completed and for the block post-tests they pass. When a tutor gets a high enough score, he is given a badge to show that he has done well. There are different kinds of badges that he gives if we continue to do well. Our mothers sew them on our shirts. If someone does especially well, Mr. Sutjipto may give him an important job in the center.

Not only do I tutor these children, I also spend one day each two weeks teaching them in small groups. I spend about half of the day teaching and about half in tutoring individual children. During their first years of learning in the IMPACT systems, almost all of their learning was by "programmed teaching." I was the programmed teacher for many of these same kids last year. But, by now they can read some, and they do some simple modules in peer groups, with one of us older students usually sitting with them in their kiosko. By next year they won't need programmed teaching.

We all help each other learn at the center. Even when it is not my day to tutor, I spend the last 15 minutes helping a student ("my student") review his module for the day. Early learners don't have different contracts such as we older students do; they complete one module of five lessons every day.)

Next year I will have different students who will be beginners. Mr. Sutjipto says that it is very important that the beginners get started right, so he asks only the very oldest students to be programmed teachers for them. For the beginners I'll spend one day every two weeks as a programmed teacher, plus 15 minutes at the end of each day with one child helping him review the day's module.

I have learned at the IMPACT center ever since I started my primary education. In my first two years I learned with a programmed teacher, and after that about half my learning was by programmed teaching. I became a programmed teacher myself after I was half way through the system. My students had had one year of learning. This year I am also doing some programmed teaching for more advanced learners, and, as I said, next year I'll help the beginners.

By this time I should know how to be a programmed teacher. It is not too hard to do, but we still are trained for the job for two hours each day the last week of vacation. Specialists come from the district office to train us, probably because Mr. Sutjipto doesn't have the time.

We programmed teachers have special instructions with each module which tell us step-by-step what to do. It tells us what to put on the flannel board and what questions to ask. Sometimes I am really surprised how smart the beginners can get.

Until I told you all about what goes on at the center, I didn't realize how busy we all were helping each other learn. But when you are doing it, it seems more fun than "busy." Once again I have to say that Mr. Sutjipto is really smart because he keeps the system running so that we all know what to do all the time.

My father doesn't have very much money, but he says that if I keep doing a good job at the center, he will find some way to let me go to high school. I would like to be an engineer and build things to help our village.

An Instructional Supervisor

Ali is a busy boy. He has started to make his own contribution to the learning of others in addition to being very responsible for his own learning. One of the important attributes of IMPACT is that children are learning to be self-directed and responsible. This characteristic of IMPACT students stands in rich contrast to the children whom we spoon-fed and marched through a lock-step curriculum in the old days. Will IMPACT students be more responsible as adults? I think so.

Ali is in his fifth year of learning, but since IMPACT learning is ungraded, we can't very well say that he is in the fifth grade. He has a certain number of modules to complete before he finishes his primary education--some 1200 in all. Ali has completed more than 900 of his modules, but his progress in some subjects, especially mathematics, has been more rapid than in others. (One of the jobs of the instructional supervisor is to insure, during contracting, that a child doesn't fall too far behind in some of his subjects.) In any case, we can't very well label IMPACT students by either grade level or by the total number of modules completed.

You'll note that Ali's basic training as a programmed teacher was given by a special team from the district office. IMPACT tries to spare instructional supervisors from the chore of preparing for and conducting such courses so that we can remain free to operate the center. The training of tutors also is undertaken by the district office. (See the next report by Yolanda who is an IMPACT tutor.) We are also freed from the work of surveying the community for resource persons to conduct special skill training. Community resource surveys are conducted by the educational coordinator, and any special modules which must be prepared with the community resource person are done with the assistance of the district office.

Not only are specialists from the district office better trained to conduct standardized courses and to prepare special materials than are most instructional supervisors, but there is also need to keep supervisors available at the center. In the old days when primary school was ten months long, we teachers took a month's vacation and spent the rest of the time finishing our work from the previous year or preparing our lessons for the next. We still have a one-month vacation, but the other free month is spent at the center. By staggering vacations, we are able to keep the center open year round. Attendance at the center is still expected of children for ten months, but they may attend as often as they wish during the two-month break. Typically all children do some study during their vacations, and

about half the normal enrollment is always there. Unfortunately, it is usually the more able child who attends rather than the one most in need of help. We are now making a special effort to get parents of children who are progressing more slowly to take advantage of the vacation months.

The instructional supervisor's duties for those children who have outgrown the need for programmed teaching and are able to study by themselves or in peer groups is a bit more varied than it is for those supervising the beginners:

- scheduling and monitoring tutors;
- contracting with students so that all are challenged but not overloaded;
- maintain individual records, usually with the help of community volunteer aides;
- make sure that there are sufficient study spaces and kioskos to adapt to the various needs, such as peer-group learning, individual study, or tutorials;
- monitor the administration and scoring of block post-tests, review individual results, and assign tutorial or peer help as needed;
- maintain and post records of contract completion;
- maintain a reward-incentive system for students and tutors;
- schedule practicum module groups for learning with community resource persons; and
- meet individually or in groups with parents, contacting those whose children have started falling behind or have ceased coming to the center.

Once again, this management of learning seems a heavy responsibility when it is put on paper, but the routines established by IMPACT have greatly simplified our jobs as instructional supervisors. Once, as a matter of fact, I was ill for several weeks, and the center continued to function as before with the help of the other supervisors, community aides, tutors, and the primary students themselves.

Enough about the instructional supervisor. Let's now hear from Yolanda, or Yoli as she prefers to be called, who is a tutor at one of our IMPACT centers.

A Tutor

My name is Yolanda, but everybody calls me Yoli. I am in my second year of secondary school. All the kids here in my village who attend secondary school have to get up very early because we have to take the bus almost 20

kilometers to school. The road isn't very good, and it becomes a big problem when the rains come. Once, part of the road fell into the river because of a heavy rain, and we had to wait two days for the bus to run again. Still, I am very lucky to be going to school. There are a lot of kids in my village who can't go because they don't have enough money for the tuition. All-in-all, there are 42 of us from my village who do go.

One day each month, two of us stay in our village rather than take the bus. On that day we work as tutors at the IMPACT learning center. We tutor the older primary students--those in the last three years of primary education. We also help out the younger children at times when they need special help. Mrs. Ho, the instructional supervisor, has the center so well organized that most of the time we know what we have to do.

We didn't have IMPACT when I went to primary school, so I had to learn all about modules and tutoring. We have a two-month vacation each year, and the district office holds a special training course for tutors for one week during vacation. We learn how to administer module post-tests and to use the results to identify the things that each primary student has not learned as well as she should. We try to help all students be perfect in what they do; at IMPACT, we call this "mastery learning."

Mastery learning is more important for IMPACT than it was for the old type of primary school. If an IMPACT student fails to master one module, she may have a lot of trouble in later modules, and we tutors would have to spend a lot more time helping to "remediate" for what she hasn't learned. Previously, at primary school, a teacher could take time to teach a lesson over if her students hadn't mastered a previous one. Of course, that kind of teacher was kind of rare; most of them just went ahead and taught what was in the syllabus, and a lot of students simply fell behind.

Anyway, as I said, IMPACT insists on mastery, which means that each student learns everything even though some may learn faster than others. There are three ways that IMPACT makes sure that a student masters his learning. All three ways are part of the IMPACT "evaluation and remediation" system, and we tutors play an important part in helping them work. The three ways are self-evaluation, tutor evaluation, and supervisor evaluation.

The first way is called "self-evaluation and remediation." Each module gives plenty of practice on what is learned, and there are many self-evaluation questions and exercises. Students do the exercises alone or in their peer groups and then they check up on how well they did by looking at the "feedback." If they make a mistake, the feedback also gives an explanation as to why the feedback answer is better, and it usually tells them what part of the module to review so that they will understand. This explanation and review is called "self-remediation." Usually the self-remediation clears up misunderstandings, but sometimes a student or a peer group will ask a tutor to help them understand better.

The second way to mastery is called "tutor evaluation and remediation." When a student or a peer group finishes a module, we tutors then give them a very complete post-test that covers everything in the module. The post-test is our means for "tutor evaluation." A post-test may be simply

questions on a paper that a student is to answer or it may be some practical exercise that she must do. Whatever kind of post-test it is, we have very clear guidelines for scoring how well a student does. And we learn to use these guidelines during our one week of training during school vacation.

Because of the self-evaluation and remediation, students usually make very few mistakes on their post-tests. Our main job as tutors, though, is to remediate for whatever mistakes they do make on the post-tests. We have very clear instructions with each module on how to remediate for each kind of mistake. Usually we sit down with a student and review certain parts of the module until we are sure that she understands. Our instructions then give us new questions or exercises for the student to do to check whether or not she has really mastered the whole module. But it is up to each tutor to be satisfied that mastery is achieved because it is the tutor who signs the achievement slip to show that a student has completed a module.

In training, we learned how to practice "positive reinforcement," and I see how well it works every time I tutor at IMPACT. The idea is to make each learner proud and happy with everything she learns. If students are made to feel proud of what they do well, they seem to try to do well all the time. We give positive reinforcement on each post-test exercise that is done correctly by doing little things such as smiling and saying "good" or "right" or "you are doing well." Each tutor does this a little differently, but the main thing is to show learners that we are pleased with their success.

When they do make mistakes, though, we don't say "bad" or "wrong" or "you didn't try" or anything that would make them think that they were dumb or lazy. Mostly at the end of the post-test we say something like, "You are doing very well. There are a couple of places in this module that are more difficult than others. Let's look at page twelve together." Something like that. This is the part of positive reinforcement that has been the most difficult to learn because it is so easy to point to a mistake and tell a learner that she was wrong. But our job is to encourage rather than to discourage. And it works; learners want to learn more from the modules.

By the way, we tutors also help the ministry improve the modules. When students make post-test mistakes, we write down what mistakes were made. Very often we find out what it is in the module that made it difficult to understand. We report this, too. We also report how we explained to the student so that she could understand better. The ministry uses this information from tutors in all schools in improving the modules.

Very early, we found that some learners were either lazy or couldn't understand or simply wanted to be taught by tutors rather than by studying their modules. We found that some kids would come to us and say that they were ready to take a module post-test, but they weren't really ready.

Anyway, we have a rule that if a learner misses more than a certain number of post-test exercises, the whole module must be restudied. We do go over the complete module with them to make sure that they understood what the

module wants them to do. (In the early days, this kind of misunderstanding was common.) We then decide whether they should try to learn the module by themselves or whether they should have some help.

Some children are just plain slower than others. They have a tough time studying by themselves. Mrs. Ho knows all the students very well and has put some of the slower students in one peer group where they won't be too ashamed of going so slowly. She also assigns one of the adults who helps at the center or a tutor or, sometimes, one of the faster students to sit with this peer group and to go through the modules with them. Sometimes she finds that one of these students really isn't as slow as everybody thought, and she then moves the student to another group.

But Mrs. Ho is very firm on one rule: no student should spend more than two days on any module. IMPACT found out that even though each student was to go at his own rate, if a boy or girl spent more than two days on a module, it was too discouraging. She now keeps close track of the progress of these slower kids and assigns other students to help them.

She also tells the tutors to be a little less strict in scoring their post-tests, but we must be sure that they understand the most important things.

I was talking about the three ways to make sure students master their learning. The first was self-evaluation and remediation, which is built into the modules. The second was our tutor evaluation and remediation based on the module post-tests. Now I will talk about "supervisor evaluation and remediation," which is the third way to mastery.

Some five to ten modules make up what is called a "block" and the last module in the block is for review of all the modules. There is a very long post-test given at the end of every block, and it covers everything that is important to learn. Mrs. Ho either gives the block post-test herself or asks one of us tutors or adult aides to do so.

Whoever gives the test, it is Mrs. Ho herself who looks over the results very carefully. This is her "supervisor evaluation." There are usually very few mistakes made on the block test because of the earlier self and tutor evaluations and remediations. When there are any errors, Mrs. Ho may do the remediation herself or ask one of us to do so. In the end, however, she is the one who decides when mastery is achieved.

In my time at primary school, we were given tests from time to time, but these tests mostly were given to grade us. There wasn't much time given to helping us understand things that we hadn't learned. IMPACT seems to me to be much better than the way I learned because we can be sure that every student learns everything. These three kinds of evaluation and remediation make it almost impossible for a student not to learn.

I told you before that I spent one day each month at the IMPACT center. But my job as a tutor doesn't end there. I have three learners who live near my house who are my students. I am their tutor.

My parents let me schedule 30 minutes each school day--from 5:00 to 5:30--to tutor my students. They come to me with any problems they have, and

sometimes they just come to talk. I know what modules they have contracted for, and Mrs. Ho lets me keep post-tests for those modules at home so I can give any that my students don't take at the center.

Usually my students don't have any trouble in keeping up with their contracts, but there are times when I have to help them on the weekend so that they can be sure to complete their contracts on Monday. They are pretty good kids, and I don't often have to tutor on the weekend.

Mrs. Ho keeps a record of how well each tutor does. It contains specific things that we do or don't do, but the most important part has to do with how well our own students do--whether they complete their contracts and how well they do on block post-tests. We earn different "ratings" as tutors and, if we do very well, she gives us more responsibility at the center.

Secondary school students in my country are supposed to give one hour every day for community service. At my school, our community service is in being tutors in our own villages. We get high school credit for being tutors, and I can't think of anything that I could do that would be of more service to our community. We had a fiesta at the center at the end of last year, and the parents of my three students got together and gave me a new valise for my school books. I was very happy.

An Instructional Supervisor

My main job with tutors such as Yoli is to monitor how they behave in this role and how well their students progress. We reward tutors with recognition--sometimes increased responsibility--according to their success. We have a formula that helps us be objective when we evaluate the tutors. The formula takes into consideration some of their observable behavior: Is their attendance at the center good? Do they make themselves available to their students at home? Do they use the modules when a student needs remedial work, or do they merely refer to the post-test? Do they follow the tutor instructions that accompany each module? Do they put into practice the behaviors of positive reinforcement they are taught to use? In addition, the formula is weighted heavily on how successful the tutor's students are in completing their contracts and in passing their block post-tests. The latter criterion is particularly important because a child's success on a block post-test indicates to me how thorough a tutor has been in helping his students resolve any difficulties they may have had on a module. Since it is the tutor's responsibility to pass a student on each module, it is also the tutor's responsibility to be sure that the child's learning level is sufficient for earning a pass. Because the block post-test is comprehensive, it is fairly easy to spot shortcomings in the tutorials.

We supervisors, no less than the tutors themselves, must be sure that we practice positive reinforcement as much as possible. In correcting tutor behavior, therefore, we stress their accomplishments at the same time that we upgrade their tutorial skills. In extreme cases (I have had one), we have had to dismiss a tutor. In other cases, we have reduced their tutorial

load because they were either too busy with their own studies or with their work at home. Tutors, on the whole, have done admirably. They truly are concerned with the progress of their own students. Many spend much more time than is asked of them to make sure that their charges progress in their learning. Parents appreciate what these youngsters are doing for their children, and the example of Yoli's present is not the exception in parents showing their gratitude.

But, it is not the IMPACT incentive system alone nor parental appreciation alone that keeps the tutorial system working so well. I think that the involvement of the total community in the learning activities at the IMPACT learning center has developed a social climate that would make it almost unnatural for tutors not to do their best.

We now ask Mr. Rodriguez to tell us about his participation in IMPACT. He has a dual role at his local center, being both a parent and a community resource person.

A Parent

My name is Osmundo Rodriguez. I make tiles for roofs in our village. The clay in my land is very good for tiles, and I use the dry leaves of sugar cane to fire my kiln.

My wife Liceria and I have one child learning in the IMPACT center. What he learns is very good. I swear that our son, Tito, who is now in his third year of learning, can read better than our older son could even when he was in grade five at the primary school we used to have. Of course, maybe we didn't know what our older son could do because all we knew from the school then was what his grades were in the different subjects. Now we know each week what Tito has contracted to do, and we get his achievement slips from the center showing what modules he has completed and whether or not he has been able to complete his contract with his instructional supervisor, Mr. Alba.

Neither I nor my wife can read very well, but Tito explains to us what the slips mean. We also check with him on how he is progressing on his contract during the week. We make sure that he has time to study and to go to his tutor if he is a little behind.

We usually go to the parents' meetings at the center each month. We have learned how to keep track of what Tito is doing, usually by talking to his tutor, Manuel. We know that if Tito does not do very well, it is largely because we don't help him enough. We know what he should be studying, and it is up to us to make sure that he does it either at the center or at home. We have also learned to praise him when he does complete his contracts (something we are happy to do). The IMPACT center belongs to this village, and it is up to us to make sure that our kids make use of it. Liceria and I both know that our responsibility for Tito's education doesn't end simply by sending him to the center each day. The learning of our boy is no longer something that a teacher must bear the full responsibility for. Now, we are all involved.

I am involved even more than as a parent. As I said, I am a tile maker. Three times each year I am a teacher; I teach boys in the IMPACT system how to make tiles--what to look for in the clay, how to work and shape it, how to dry it, and how to fire it so that it will last.

Two years ago the educational coordinator visited me to find out if I could teach what I know to students at the center. I told him that I couldn't read or write very well and that I had no idea how to teach. He said that there would be no problem because he would send someone to talk to me so that they could prepare what they called a "module" for children to use when they learned from me. I finally said OK, and I am now a teacher three times a year. I have learned that, in the IMPACT system, I am called a "community resource person." Liceria jokes with me sometimes about being so important.

The module that we made on tile making has pictures and instructions for the youngsters to follow when I teach them. It also has some questions for them to ask me, and I have some of my own to ask them.

At each step--from the digging of the clay to the firing of the tiles--I show them how and explain what to look for and why. Then I let them try to do it by themselves, and I help them when they don't seem to understand right away. In the end, every child does fairly well--with some, of course, doing a little better. I sign their achievement slips for them, and I also give each one his own tile that he has made (usually with his initials) after I have fired them.

Being a teacher three times each year gives me a welcome break. I also feel that I am making a real contribution to our center and to our village.

An Instructional Supervisor

Mr. Rodriguez teaches something that we would not dare put into a standard curriculum; his subject is too specialized. But what an enriching experience it must be for a child to learn first hand how to make tiles--or in other cases to arrange flowers, to roll cigars, to turn pottery, to survey for a road--whatever.

When IMPACT was first begun years ago to meet the need for a low-cost quality primary education, it was directed mainly at the needs of children of primary school age. As IMPACT developed, however, so did the concept of a community learning center which would meet all the educational needs of the community.

The next two reports illustrate how the center has grown to serve various community needs beyond those solely of primary education.

Out-of-School Youth

My name is Sanith. I have a small stand near the road where I sell fruit. On Fridays I also have a place in the market.

At the end of third grade I stopped going to school so I could help my parents by selling their fruit. We don't have much money, and what I earn helps the whole family. We also have been trying to save enough money so my brother can go through secondary school. My father and mother think that education is important, but there seemed to be no way that they could have kept me in school.

That was before IMPACT came to our village. Although I am now 14 years old, I am continuing my primary education--and I also continue to sell fruit from my stand.

When they first explained IMPACT in our village, they said that although it was mainly for the younger children because it would allow them all to complete a primary education, the IMPACT center could be used by everyone in the village. My mother talked to the instructional supervisor, Mrs. Gaw, about me and asked if there was any way that I could continue my education and still keep selling fruit. Mrs. Gaw said, "Of course there is a way; IMPACT is designed so that people who have dropped out of school, such as your daughter, could continue their studies." She then gave me some tests to find out what I really knew. After that I began checking out modules from the center that I could study by myself when I am not too busy with my work. When I finish a module, I go to the center for my post-test, and someone is usually there who can help me if I make any mistakes on the test.

I am not going as fast as the children are who go to the center every day. But I am determined to get a primary education. I am not ashamed that I am older than the full-time students because many adults in the village also are learning different things at the center. My parents are very proud that I can study and work at the same time.

Mrs. Gaw said something the other day which, in a way, explains why I love IMPACT. She said to me, "In the old days, you would have been called a dropout, and there was little that the school could do to help you. Now, you are no longer a dropout because you are continuing your education." Then she laughed and said, "In IMPACT we don't call anybody a dropout until they are 30 years old--and maybe not even then."

An Instructional Supervisor

"Dropouts" even older than Sanith are coming to the center for modules to help them complete a primary education. The ministry is now preparing modules which have a more adult context so that those older persons who wish to continue their education won't be put off by instruction which has been geared to the interests of younger children.

There has been a true "impact" on many of the communities with IMPACT centers. Witness the following report of a village headman.

A Community Leader

I am the headman of our village. They have elected me every year for the past ten years so I feel that I have been doing a pretty good job.

In the old days, we had a primary school with most of the village's children going there for at least three years. We had 10 teachers and a principal. Some of the villagers attended literacy classes which students from the university taught. We also had health workers and agricultural extension workers who would try to help our village by teaching us better ways to do things. It was a good village, but it has become a far better village now that we have an IMPACT community learning center. It now seems that everyone, young and old, is somehow involved in learning and in contributing to the village.

The center is our own, and we use it both during the day and in the evening. In the daytime, children are getting a primary education through IMPACT, and most of them are completing their education rather than dropping out. We also have saved a lot of money because now two instructional supervisors manage IMPACT learning rather than the 10 teachers we had before. The money saved has been used by the ministry to provide our children with better learning materials and equipment and to provide places for all the children in the village.

A number of us in the village also help out at the center as aides or as community resource persons. I, personally, teach a social studies class concerning local administration.

But, because the community has become so involved with IMPACT learning, the center has truly become a focal point for all our learning. Now we have regularly scheduled evening classes for literacy, health, agriculture, home economics, crafts, and other subjects. For most of these classes we have found someone in our own village who could do much of the teaching. And attendance is good. We have also seen other changes take place in our village, simply because we have become more involved and, I suppose, more proud. We have built several bridges and have drained a swamp. Even the houses seem better kept than before. Whether this enthusiasm will continue indefinitely, I don't know. But I do know that we will never go back to the old ways--and I know that the citizens of our community will continue to support IMPACT for the education of our children.

An Instructional Supervisor

Well, that is IMPACT seen through the eyes of those intimately involved with it. These reports are far more informative than if I had tried to describe the system myself. I also learned a few things I didn't know!

By now, however, I am sure that you yourselves have some questions that you would like to ask. Since you can't, I will try to anticipate at least some of them.

To give us a better overall view of IMPACT, the minister of education has graciously consented to answer some key questions.

The Minister of Education

Q: Sir, we have been impressed with what has been reported to us about IMPACT. We have been told about how IMPACT has led to substantial savings. Could you tell us how substantial these savings really are?

A: I would be most happy to do so because reduced cost-per-pupil for quality education is the key to IMPACT's success in our country. Let me take for illustration a cluster of ten villages. Before IMPACT there were some 300 students and ten teachers in each village. Add to this two district officers and you have a total of some 102 educators serving the ten villages.

With IMPACT, the same number of children can be served with only two educators in each village (we call them instructional supervisors), plus two district officers whom we now call educational coordinators, plus three teaching specialists who are itinerants serving the ten villages in the teaching of art, religion, and other special subjects, plus one district supervisor--a total of 26 educators.

This total, compared to the previous 102, represents a 74 percent savings. When we consider that educator costs of all kinds (training, salaries, retirement, and the like) are some 85 percent of our educational budget, real savings amount to 63 percent of the budget--.74 times .85.

In this country of 40 million people, we thus have in excess of 12 million dollars annually to cover increased enrollments and to prepare quality instructional materials. More than $7,000 is available each year to each IMPACT center that was not there before.

Q: Impressive. We can't help but wonder, however, what has happened to the teachers who are no longer needed for primary education. Have you had to dismiss a large number?

A: No teacher has been dismissed. We have sharply reduced the number of new teachers we produce in our teacher training colleges and have let normal attrition through retirement and career changes reduce the number of teachers. The steady increase in our school age population also will make the high student-teacher ratios of IMPACT attainable within five to ten years.

Q: What about teachers colleges--will they go out of business?

A: Again, no. We have a series of three-month courses to upgrade present teachers to become instructional supervisors. Teacher training colleges are the natural places for teacher upgrading. A number of these institutions have been changed into centers of excellence for the production and tryout of IMPACT learning materials and for the continued improvement of our curriculum. Others have been modified to become needed centers for technical and agricultural education.

Q: What about the curriculum for IMPACT? What changes have you made?

A: None, although we are now in the process of a complete revision of our primary curriculum to tailor our education more to the realistic needs of our society. To do this is a fairly long and detailed process.

When IMPACT was first begun here as a pilot project, we seriously considered taking the logical first step of insuring that the objectives of education were what we really wanted and needed. But, because a thorough job of establishing such objectives is so time-consuming and because at that time we didn't even know whether IMPACT would work, we decided to test the IMPACT system in its ability to achieve the same objectives that had been established for our more traditional primary schools.

Now that IMPACT has proved itself to be a successful system for the delivery of primary education, we have the time (the luxury, if you will) to revise the curriculum itself. We plan a step-wise revision of IMPACT instructional modules so that a total revision can be made over the next three years.

Q: In the description of IMPACT that I have just read, it seems to have gone far beyond being simply a system for quality mass primary education. It has encompassed all kinds of community education, including literacy training and other types of continuing and adult education. Are these activities essential for the success of IMPACT for primary education?

A: No, they are not. IMPACT for primary education can stand on its own. It could be separated from continuing or adult education. However, the development of the IMPACT community learning center and the community participation engendered by IMPACT make these other educational activities natural adjuncts to IMPACT itself.

Q: Is IMPACT considered as formal or as non-formal education?

A: It is both formal and non-formal, but that distinction is a bit counterproductive when you are trying to marshal all your educational resources to solve a problem. Such a classification was very valuable to us in the past when we tended to equate education with what went on in the traditional teacher-led classroom; it helped us to look elsewhere for valid educational resources. But when you are trying, as I said, to use all resources, applying such labels to any of them makes one think of non-formal education as being somehow supplemental to the formal--no matter how compatible you may make them--and one tends to lose touch with what has been essential to a system such as IMPACT:

the integration of all resources. In any case, IMPACT falls into both the formal and non-formal camps. I'm glad that my government does not have a separate ministry for the two types of education; if we did, we might have failed to expand our vision sufficiently to conceive of IMPACT.

Q: The reports about IMPACT have all come from rural areas. What about urban areas?

A: We first started IMPACT in rural villages because it was there that the problems of mass primary education were the most difficult to solve. Seventy percent of our population lives in rural villages, and it has been there that dropouts and wastage have been the most evident. We felt, justifiably, that if we could solve the problem of rural primary education, we probably could adapt whatever system we developed to the urban areas. We definitely did not want to develop any kind of system which would equate rural education with anything that could be described as either marginal or low quality. We had seen this dichotomy elsewhere and were determined to avoid it ourselves.

Yes, IMPACT is our system for both rural and urban primary education. And the curriculum is the same except for differences in the learning of applied skills and some social studies which we have made appropriate to each locality.

Community participation in urban centers, particularly those in larger cities, has taken on a slightly different character. Community identification and involvement, so evident at the IMPACT centers in rural villages, is much harder to come by in cities. So our main focus in the urban areas has been on the parents themselves. There are enough literate parents and those with special skills that we have not had to appeal to any great extent to the community at large for center aides or for special skill teachers. Otherwise, urban centers run in quite the same manner as those in rural districts.

Q: Are there some components of the IMPACT system that can operate <u>without</u> community involvement?

A: The system of modular self-paced instruction could be carried on by instrucitonal supervisors, by assigned secondary school student tutors, and by older primary school students helping the younger ones in their learning activities. We might have to add another instructional supervisor to carry out some of the responsibilities now shared by community members. But, IMPACT could function. The teaching of special skills by community resource persons provides for enriched learning experiences. If this activity were lacking, student learning would be less rich, but IMPACT could still function and provide an education of a better quality than we were able to provide at our primary schools in the past. We had very little help then from community resource persons. Even should parents fail to respond to the evident appeal of IMPACT for their children's education, the system could function with its built-in system of contracts and incentives.

Q: Do you pay community members who help at the IMPACT centers as aides?

A: Definitely not, and there are two good reasons for not doing so. The first is based upon the experience of many countries. They have found, time and again, that when teaching aides are paid--however little--they shortly become a kind of paraprofessional, expecting to be paid more because of their experience and because they do much of what a teacher previously did. And their point of view has a certain validity. But, if IMPACT were to reduce the teaching force only to hire less highly-trained aides, the savings from teacher reduction would be greatly diminished.

The second reason has to do with the community spirit essential to IMPACT. I am angered by the idea of paying someone to improve his own community. When we speak of IMPACT, we are speaking about the education of the children of a given community. Who wouldn't give a day or less each month to aid in the education of his own children?

Q: Has IMPACT solved the problem of mass primary education?

A: Temporarily.

Q: You mean?

A: I mean that we have made use of local resources and the latest techniques of learning to buy ourselves time to solve the more pervasive problems of our growing population. Population education is in our curriculum, and all sectors of the government are sparing no effort in trying to reduce our rapid rate of growth. Left unchecked, the pressures of population will overcome our abilities, even with IMPACT, to provide for universal primary education.

Given a stable population, I would then say that IMPACT will solve our problem of mass primary education. We will never return to traditional teacher-led classes with a lock-step progression of children through the grades.

Q: What about the future of IMPACT?

A: We will continue to improve the system. I have already said that our curriculum is undergoing a revision to make it more relevant to our country's needs. We are also establishing a system of instructional supervisor evaluation. We are basing the system upon the experiences we have gained to date about those behaviors of supervisors that have been found to be either effective or ineffective for IMPACT learning. Such behaviors are critical to the success of the system and, thus, should be the bases for the evaluation and improvement of supervisors. We are giving serious consideration to adapting the IMPACT system to our secondary schools, and other countries are considering its use, including some of the more industrialized countries.

But, and here is the big "but," IMPACT is not a solution in search of a problem. It was developed specifically to meet our needs for a low-cost system for the delivery of effective mass primary education.

Problems of secondary education in this country or primary education problems in other countries deserve to be analyzed in the same way that we in Southeast Asia analyzed our primary education problem.

Q: What do you mean by analyzing a problem--so that you could come up with a solution such as IMPACT? Could you clarify for us how IMPACT came into being in the first place?

A: I think that we educators in Southeast Asia are more likely to focus our attention on priority problems than are educators in most parts of the world, simply because we cannot afford to waste our limited educational resources on things of marginal importance. We have become very strict with ourselves in this matter and have begun to apply a systems approach in an effort to be as parsimonious as we can with our resources.

The systems approach is simply a systematic way to solve problems, and the first step is actually to define the problem itself. It seemed to many, at the outset, that our problem in primary education was that there was not enough money to support mass primary education or that there were not enough teachers or schools. When we restated the problem (the real problem) in the simple words that "less than half our children were getting a full primary education," we were freed from thinking about money, or teachers, or schools as being the real problems.

In any case--and I won't belabor this explanation of the systems approach--it allows us to consider systematically our problems, resources and constraints, objectives, alternative solutions, and criteria for evaluating them. When we did look systematically at our resources and constraints and when we geared our minds to a wide number of solutions to the problem, the basic concept of IMPACT evolved. Its elements maximize the use of all available resources in achieving our objective of an effective mass primary education.

My brother-in-law, who has little else to do, prepared a paper (he calls it "Discourses") which relates a conversation between some "citizens" and a "teacher"--a conversation in which the citizens present their problem of primary education to the teacher, who simply asks them a series of questions (systems approach questions, if you will) which results in the citizens coming up with the idea of IMPACT. The paper is a remarkably good presentation of the way the IMPACT idea was conceived through the systems approach. I say remarkably good because my brother-in-law wrote it. I have a copy which you are welcome to.*

Q: Sir, has there been much resistance to IMPACT? It is an extremely innovative idea.

A: I am not sure exactly how innovative it is. Long before we had schools, parents and village elders were teaching children the things they needed to know to become effective adults. There is no component of IMPACT

*Editor's note: The brother-in-law's paper, Discourses, introduces this report.

that has not been tried out successfully at some time or other. Let's name some of these components. There is self-instruction, peer-group learning, evaluation and remediation, older student tutoring, peer tutoring, teaching by older students, use of community aides, community resource teaching, contracting, self-pacing--there is no one component that is innovative or new with IMPACT. What makes IMPACT both unique and workable is a system which enables a few trained educators to manage these learning resources for a large number of children.

Yes, we have had (and still have) some resistance to IMPACT. I earlier mentioned the fears that teachers had about losing their jobs. Some of the deepest resistance has come from the faculties of our teacher training colleges. These are people who have devoted their lives to training teachers to give our children a quality education. They were not so afraid of being displaced themselves as they were that children would not receive, under IMPACT, the quality of education that these faculties had been striving for. My answer to them then, and now, is for them to visit an IMPACT center and see for themselves what kind of learning is being achieved by primary children. I don't claim that IMPACT can compete with an outstanding teacher who is responsible for only about ten youngsters. But I do claim that the learning of IMPACT students far outstrips what we had been achieving in our typical classrooms. Most of these teacher training faculties are now hard at work upgrading teachers to become instructional supervisors for IMPACT.

A few of my more patriotic brethren have objected to IMPACT as a Western-imposed idea. Ye gads! First, IMPACT was begun here. We took ideas from everywhere, some of which we tried out and discarded, others of which we modified, shaped, and adapted. Second, it is the Western world that is now looking to us for ways to meet the ever-increasing costs of education. They are looking at IMPACT in particular. Third, I ask my brethren where they think the idea for our previous system of primary education came from. It was the traditional system that was imposed on us by the Western world, beginning at a time when most Asian countries were colonies.

I have about the same answer for those I call "traditionalists." They equate quality education with the system they went through including, in most cases, a foreign university. Many traditionalists are the same people who returned from their university training proudly wearing ties and woolen vests. And their ideas about traditional education are as ill adapted to our climate as were their clothes.

A few of the more affluent parents, whose children went to the best schools in the past, feel that they can afford to give their youngsters a "better" education than is provided by IMPACT. My answer to them is that IMPACT uses all available community resources and that one of their resources is money. They cannot buy better instructional materials or devise a better evaluation/remediation system to insure that mastery learning is taking place. They are free, however, to use their more abundant resources to hire professional tutors or center aides. They have my blessing.

There is one small group who will remain resistant to IMPACT no matter what is said. They are the elitists who feel that society is best served by concentrating educational resources on educating only the more able students who are to become the future leaders and thinkers. They are not so opposed to IMPACT, per se, as they are to the idea of mass primary education.

Theirs is a philosophical point of view which I cannot change. But I most vehemently can disagree! Our society is only as healthy as the skills and knowledge of our total citizenry allow us to be. A farmer who can read, who has learned to try new ideas, is informed as a participating and voting citizen, who can handle money and keep himself out of the hands of usurers, who can raise his own children intelligently and instill in them a good sense of values--this is a farmer who will contribute to the growth and strength of our society. We cannot deny any of our citizens a primary education without weakening our whole society.

And I disagree with the implied mechanism that the elitists would use for identifying those more able children who are to be the beneficiaries of our educational efforts. The implication is that genetics, family ties, or affluence determine who are the more able. This is patent nonsense. IMPACT, with its system of self-pacing, evaluation, and mastery learning can better show us which children have the potential for higher education. It is our job to see that such children, be they from the poorest village in our country, have this opportunity. And IMPACT is the beginning.

Thank you, Mr. Minister.

And we thank the instructional supervisor for presenting all these reports, beginning with Felicia, who is in her second month of IMPACT learning, and ending with an interview with the minister.

A SUMMARY OF THE IMPACT SYSTEM

1. One professional educator, the instructional supervisor, manages the learning of a large number of primary students, perhaps as many as 200.

2. The locus of most IMPACT learning is the community learning center.

3. Beginning students learn with the help of older primary students who are trained (programmed) to teach specific lessons and are called "programmed teachers."

4. Once reading skills are sufficiently developed, students may learn by themselves, with a friend, or in small peer groups.

5. All students have tutors. Beginners are tutored by older primary students who are themselves tutored by primary graduates, either secondary school students or other community members.

6. Special skills, appropriate to the locale of the center, are often learned with the help of community volunteers who themselves are experts in an applied skill.

7. Learning is modular, and each module of 3-5 hours has the following characteristics:

   a. it is reusable;

   b. its objectives are clearly stated so that a student understands what is to be learned;

   c. students also understand how to learn from a module, either through instructions contained in the module or through training;

   d. learning within a module is broken into fairly small segments, each of which gives opportunities to practice or review what is learned through evaluation exercises and feedback;

   e. comprehensive review is given as a final learning segment; and

   f. post-tests and tutorial remediation are part of each module.

8. Groups of five to ten contiguous modules form a "block." The final module in a block is for review, and it is followed by a comprehensive post-test.

9. A system of evaluation and remediation is cycled throughout the learning sequence in an effort to insure mastery learning. This system includes:

a. self-evaluation and remediation as part of modular learning;

b. tutor evaluation and remediation with tutors administering module post-tests and remediating any deficiencies of their students; and

c. supervisor evaluation and remediation based upon block post-tests.

10. After the first several years, learning is self-paced, with students progressing at their own rates.

11. A system of student contracts controls pacing so that each child is challenged to perform as well as he can--but no better than he can.

12. A system of incentives is tied to contract achievement.

13. Separate incentive systems are used for tutors and older students who aid in the learning of the younger ones. This system is based upon both their behaviors and their students' achievements.

14. Community volunteers act as unpaid center aides.

15. Parents are taught how to monitor and encourage the progress of their children.

16. Learning usually takes place at the center, but often takes place:

    a. at home when a child studies after center hours;

    b. at home when a child is either sick or must help his parents; or

    c. at appropriate sites for the learning of applied skills under the tutelage of community members.

17. Specialists from a district office conduct training courses for tutors and programmed teachers.

18. Itinerant specialists, each responsible for some ten centers, are available to teach special subjects, such as art, music, religion, and others.

19. An educational coordinator oversees and supports the activities of approximately five centers.

20. Out-of-school youth are encouraged to take advantage of the center's learning opportunities through self-study and tutorials by community members.

21. Eventually, all learning activities of a community would take place at the center, including continuing and adult education.

22. An IMPACT management system enables instructional supervisors to truly manage these various components and activities of IMPACT learning.

The foregoing pages have depicted an IMPACT of the future.

The actual IMPACT of the future may differ somewhat from that which has been presented. These differences, if they do arise, will come with the experience gained by the educators of Southeast Asia who are now developing and trying out IMPACT in experimental rural sites in the Philippines and Indonesia.

These experiments, which began in January 1974, are scheduled to be completed in 1978. It will be in the latter year that you and I will be able to view the real IMPACT of the future.

Beginning on the next page is a report on the progress at these two experimental sites. My report will only summarize their progress rather than replicate the more complete reports prepared by the INNOTECH center, the latest of which is dated June 1975.

SUMMARY OF FIELD PROGRESS TO DATE

I last visited the two IMPACT field sites in May 1975. Both are in scenic settings. Four villages near Solo in Central Java comprise the Indonesian site. They are in flat land with a view of mountains. The main crops are rice and sugar cane. Serving these four villages are seven primary schools.

The island of Ceba provides IMPACT's field site in the Phillipines. The five villages at the site are all located along a small river forming a narrow valley flanked by steep terraced hills. Principal crops are corn, tobacco, and bananas. Five primary schools are located in the villages.

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

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

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

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

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

I will avoid reporting similar disappointments from my own observations. On the pages which follow, the main components of IMPACT will be examined one by one. For each, the present status at the field sites--whatever successes or problems they may be having--and their plans for the future will be summarized. This approach should give us a better perspective about present developments in relation to ultimate goals than we would have if separate presentations were made of progress and plans.

"Community Learning Center" is the term being used at the field sites rather than "school." The Philippines held an in-country seminar in December 1974 on the function and design of such centers. Although they are using existing school building, they have modified and partitioned them to provide different stations, including a multi-purpose area, a library and materials area, a display area, a testing area, etc. Parents have built five to ten thatch and bamboo kioskos at each center for individual and small-group learning. Indonesia also is using existing school buildings, but they have rearranged the old classrooms so that small peer groups can study together and have set up material storage and distribution stations for the learning modules.

There appear to be no problems associated with developing center facilities with the exception of sufficient space at one Indonesian center for the construction of kioskos.

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

The full primary curriculum has yet to be covered by IMPACT at the field sites. The Philippines began at the fourth grade level[1] in June 1974 and added the first, second, and fifth grades in June 1975. Grades three and six will complete the curriculum in June 1976 for a final tryout year and will be followed by a demonstration year running from June 1977 through March 1978.

Indonesia began IMPACT learning with the third trimester of grade four in September 1974. Beginning in January 1975, both grades four and five were included. In January 1976, grade six will be added, and it will be followed by grades one through three in January 1977. The Indonesian demonstration year is thus planned for January-December 1978.

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[1]You will have to excuse my use of "grades." even though it is contrary to the nongraded concept of IMPACT. Their use allows a more convenient description of progress and plans at the various levels in the primary curriculum. But once the entire curriculum is covered (now six years of graded courses) by production of the 1200 learning modules, the use of graded categories (Grade 1, Grade 2, etc.) will be unnecessary and will disappear from usage.

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

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

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

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

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

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

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

The Philippines plan to have one supervisor for grades four through six and one for grades one through three in June 1976, but present school principals are to be retained for that year. Depending upon the success during that year, it may be possible to complete the reduction of staff to only the targeted two instructional supervisors by June 1977.

Tentative plans in Indonesia call for only one instructional supervisor for grades four through six beginning in January 1976. If this reduction is successful, it is likely that there will be only four educators per center in January 1977 (one for grades four-six, one for grade three, one for grades one and two, and a principal). In 1978 there would be only two instructional supervisors.

I wish them well in trying to achieve these reductions because they represent the means for the lowered per-pupil costs essential to IMPACT. The keys to achieving increased instructional supervisor responsibility will be their early involvement in the project; their training; their experience in managing learners starting with relatively small numbers and gradually increasing the numbers; and the monitoring and support provided them by the field staffs, particularly that of the educational coordinators who provide most of the direct interface between the staff and supervisors.

The Philippines has combined project involvement and training through regular Friday meetings with the supervisors and by having them work full time at the field office during vacation months, helping to develop learning and management procedures. The grade four supervisors were fully confident of their ability to manage grade 5 when I visited the Philippines in May of 1975. Indonesia also holds weekly meetings with supervisors and has developed an observational checklist (primarily of supervisor behaviors) as an aid in monitoring, evaluating and improving instructional supervisor performance.

Staffs at both sites obviously are well aware of the need to develop supervisor training and management systems and to support them fully as they undertake even greater responsibilities. I feel confident that they will succeed. Even should they have to lower their sights to a lesser ratio (say 100 or 150 students per supervisor) IMPACT can reduce costs significantly and become a viable system for providing more and better learning opportunities for those who want to learn.

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

Early module preparation at the two sites resulted in some fairly stylized and repetitive self-instructional modules that were geared to language competencies rarely found among IMPACT students. (Language competencies of students in the fourth grade were typically not adequate for even the simple modules, and remedial language courses were necessary in both countries. Twenty special remedial modules were developed in the Philippines for this purpose. This problem should disappear once IMPACT is installed at the earlier grades.) Whereas the initial modules and their posttests tended to emphasize memorization, the newer modules cover the development of practical skills, concept formation, and practice in and generalization of knowledge. Tryouts, revisions, and brainstorming sessions for new ideas have brought about a refreshing variety of learning modules in more simplified language.

The earlier fairly-repetitive modules presumably could have led to student boredom. The later modules, because of their variety, could conversely have lead to student confusion. This potential problem was anticipated, and short practice modules of each variety have been developed so that students may "learn how to learn" each type of module. Practice modules, particularly in Indonesia, have been quite successful. A total of 26 such practice booklets are in use in that country. The initiation of peer-group learning also has eliminated much of the confusion that some children had earlier when they were studying on their own.

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

As a result, module preparation and production has been able to meet (with some few exceptions) the needs of students at the centers. The Philippines produced 326 modules for grade four,[1] and by April had prepared 21 for grade five and had revised a substantial number of previously used grade four modules. In addition, the Philippines had drafted 213 lessons (about 45 modules) for grades one and two. By the same date, Indonesia had prepared 170 of the targeted 177 for grade four and 117 of the targeted 186 for grade five.

In my own review of representative modules (my Indonesian is marginal), I was generally impressed with their quality. Illustrations were excellent and typically only small learning segments were presented before there was an opportunity for practice and self-evaluation. However, two problems seem to be persisting in the modules. The first is an unnecessarily high vocabulary level, particularly in the Philippines. And the second is what seems to me to be too great an emphasis on memorization. This latter fault probably lies more with the curriculum itself than with the IMPACT modules.

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[1]As will be seen later, 326 modules at one grade is far more than is required and more than can be reasonable used by students.

The obvious restriction of self-pacing in Indonesia (next section) may have resulted, in part, from production limitations before the acquisition of a second printing machine.

Project plans did not call for reusable modules during the first year; children were to write directly on the modules. There were two reasons. The first was that separate answer sheets may have presented beginning students with too complex a learning situation. This was at a time when the tryout of modules with their self-evaluation and feedback components was being undertaken, and the addition of separate answer sheets at that time could have overloaded some children with a learning situation that was too unfamiliar. The second reason was that modules were to be revised after the first year's tryout so there was no need to preserve them for later use. (The children and their parents also were happy to be able to keep these materials.)

The revision following the first year's usage was initially structured far less well than at later stages. Now, module feedback sheets are filled out by tutors and instructional supervisors to indicate specific learning difficulties in and suggested improvements of the modules. Subject specialists use this information in their revisions.

Separate answer sheets for all exercises in the modules are now the rule, and children appear to have no difficulty in their use. Because children do not mark the modules themselves, they are returned to the center after use so that other students may have access to them when they are ready. The Philippines is now supplying the schools with one module for every six students, and Indonesia one for every four students.

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

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

Block posttests were given in Indonesia in December and again in April to both IMPACT and control students. In all cases, IMPACT achievements were higher. These results are not surprising because the tests were based upon the modules, but the encouraging part of these results is that mean test

scores of IMPACT students over all the subjects ranged from 71 to 93 percent. Since the scores represent learning before post-block remediation, we can tentatively conclude that the self- and tutor-evaluation/remediation sequence is leading in the direction of mastery learning.

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

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

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

Both Philippine problems are on the way to being solved.

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

One reason was given earlier: because all subjects are not learned via IMPACT for the first two trimesters after a student is brought into the system, once set class periods are scheduled for both IMPACT and non-IMPACT

learning. When I reported this on an earlier page, I also reported that the staff is reviewing development plans, particularly in relation to putting all subjects under IMPACT at an earlier date. This change in plans seems essential.

In the earlier discussion of reusable modules, it was reported that Indonesia was supplying each center with one module for every four children. What was not reported is that four children are studying one module together. And all children in a center are studying the same module at approximately the same time. This situation was brought about by the need to insure that all students be prepared for the achievement tests given by the provincial office at the close of each trimester. The field staff is well aware that the successful development of the IMPACT concept in Indonesia may well hinge on their ability to overcome this administrative hurdle. A meeting of officials from Indonesia, SEAMEO, and INNOTECH was held in June 1975, and the above problem was high on the agenda. I do not know the results of that meeting, but they are critical to the development of IMPACT in that country. Nothing is lost if a solution is found; the self-pacing aspect of IMPACT is lost if a solution is not found.

But remember that the achievements of IMPACT students equalled or exceeded those of non-IMPACT students in both countries. IMPACT children are learning by modules.

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

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

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

In the Philippines, peer-group learning was only encouraged during the final academic month, so little can be reported. Over the two-month vacation period[1], however, subject specialists, the educational coordinator, and instructional supervisors developed a scheme to instruct students how to make best use of peer-group learning.

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[1] I visited the Philippines during vacation, but the centers were open and more than half the children were in regular (non-compulsory) attendance.

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

Plans were for the supervisors themsleves to act as programmed teachers for a month or two while they worked out any problems in the procedures and taught older students to take over programmed teaching responsibilities by August or September.

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

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

Tutorials by post-primary students have been a part of the experimental program for a number of months. And tutorials are progressing as planned with instructional supervisors reporting generally that tutors are of real help in student learning. In both countries, special courses were designed to give tutors practice in this new role. Until June 1975 all tutors were "home grown," i.e., brothers, sisters, and neighbors of IMPACT students. Tutors typically performed their duties at home rather than at the center (the exceptions being Barrio High School students acting as center tutors in the two Philippine villages which have such schools).

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

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

meetings with instructional supervisors and educational coordinators. Indonesia also has developed a behavior checklist for tutors.

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

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

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

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

In Summary: IMPACT has been functioning in the Philippines for one year and in Indonesia for less than one year. For a project with the scope of IMPACT, progress to date has been impressive. Children are learning by modules, tutors are giving remedial help, and instructional supervisors are managing learning activities. In a short time, programmed teaching and community skill teaching will have started. A few persistent problems remain: an overloaded curriculum in the Philippines, a lack of self-pacing in Indonesia, the need to develop inexpensive incentive and contracting systems, the lack of total parent involvement, etc. But, progress to date is indeed impressive. There is no reason to suppose that the IMPACT of the future described in the first section of this report cannot be achieved by the 1978 target year.

I concur with the statement of Robert Jacobs after his visit to the Philippines IMPACT site in November 1974:

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

In March of this year, an IMPACT fiesta was held in each of the five Philippine villages. Parents composed a number of songs in the Cebuano language. One is translated thus:

I

It was March, 1974
On the 18th, Project IMPACT was born;
Today is its birth anniversary.

II

Project IMPACT is a fresh wind.
Parents have roles to play
In bringing up children---
Discipline is the thing.

III

Your child must be at your side
For some length of time;
The hours should be kept---
His lessons studied.

IV

You should be wide awake
To the kind of module he holds;
Module covers used---
Carry a variety of colors.

Thus our thanks to the leaders
For the birth of a new concept;
So we must stand solidly behind it
For here lies the parents' success.