



# Teaching yourself in primary school

Report of a seminar  
on self-instructional programs



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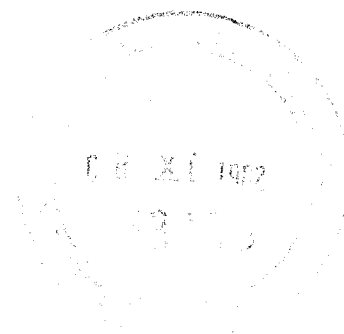
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## ***Multiple Outcomes and Perspectives in the Evaluation of Project Impact***

In January 1974, Innotech launched the tryout and developmental activities for Project Impact in two field sites in Naga, Cebu, Philippines, and in Solo, Indonesia. The project was envisaged as a solution to the problems of provision of basic education. The problems included the inability to hire enough teachers to meet the ever-increasing school population, the high percentage of dropouts from primary school, and the inability to provide the school population with adequate instructional materials.

During the next 5 years, Project Impact (instructional management by parents, community, and teachers) took shape in accordance with the sociocultural milieu of the two host countries. The model in the Philippines is characterized by:

- An integrated sequence of knowledge, skills, and attitudes that were derived from the country's prescribed curriculum and were translated into programed instructional modules;
- An emphasis on learning-how-to-learn skills;
- Programed teaching by elder pupils in basic literacy and numeracy skills, peer-group learning among elder pupils, and self-instruction for elder pupils;
- Self-paced progress among the learners, who decide when they are ready for evaluation;
- A shift in the teacher's role to that of an instructional supervisor managing the learning activities of some 100-135 multilevel pupils;
- Several assistants to the teacher or instructional supervisor (IS) including an IS aide who is at least an elementary school graduate and who takes care of the routine and clerical functions in the management of learning; a programed teacher, who is an elder pupil who monitors the learning of basic literacy and numeracy skills by beginning learners, using a programed lesson; a tutor, who is a secondary school student and who reports to the learning centre at certain times during the week or month to help in the remediation activities; unpaid community resource persons for specialized skills training; and an itinerant teacher who visits the learning centre once a week to take care of scouting, physical education, arts, and music;
- Within-school groupings, by family, of some 40-50 multilevel

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pupils, one instructional supervisor managing the activities of 2-3 families;

- A flexible schedule of activities;
- An open-door policy for learners who may leave or reenter school any time during the school year with parental permission;
- A policy of positive reinforcement for the learners, the programmed teachers, the tutors, the resource persons, and even the parents; and
- Use of management aids such as pupils' weekly contracts, leave-of-absence forms, incentive cards, and pupils' monthly progress cards.

The first batch of graduates from the Naga Impact schools entered the secondary schools in their respective communities in school year 1977-78. In that same year the level 5 and 6 Impact pupils in Naga schools, and in the replication sites in Lapulapu City, Cebu, and in Sapang Palay, Bulacan, together with the control grade 5 and 6 pupils in comparable schools in the three communities, took a national achievement test (Soutele) for grade 6 schoolchildren. The results of the test showed that the Impact pupils were as good as, if not better than, their counterparts in the control schools.

In that same school year, Innotech initiated a cost analysis of the project. Two such studies were undertaken, and the findings showed that the Impact learning system cost 50% less than did conventional schools of comparable size.

Encouraged by the results of the early evaluation activities, Innotech decided to undertake a follow-up study of the performance of the Impact graduates at the secondary level and of the school leavers.

## THE STUDY

A 2-year tracer study of the Impact graduates and school leavers sought to answer several questions:

- Are there significant differences in the achievement of Impact and non-Impact graduates (or leavers) in English, Pilipino, and mathematics?
- Is there a significant relationship between achievement and the variables of mental ability, sex, age, and socioeconomic status of the Impact and the non-Impact graduates (or leavers)?
- Are there significant differences in the self-concepts of the Impact and the non-Impact graduates (or leavers)?
- Are there significant differences in the attitudes of the Impact and the non-Impact graduates (or leavers)?
- What are the reasons for leaving school among the Impact and non-Impact leavers?
- What is the nature of the postschool experience of the Impact and the non-Impact leavers?
- What are the perceptions of parents of the Impact learning system, particularly with regard to achievement, self-discipline, personality development, and study habits of the Impact learners?

Hypotheses about the former students were formulated, tested on the basis of the data obtained in the follow-up research activities, and rejected if the differences among the two groups of students were not significant at the 0.05 level of probability.

#### BASIC ASSUMPTIONS

The assumptions underlying the study were that:

- Teachers' grades are valid indicators of student achievement;
- Differences in the length of pupils' experience in Impact do not cause any significant differences in their achievement, self-concept, and attitudes;
- The students' responses to the self-concept and the attitude questionnaires are accurate and honest indices of their perception of self and of the situations presented to them;
- The interventions that took place during the period from school leaving to the time of the follow-up activities were similar for both the Impact and the non-Impact graduates and leavers; therefore, significant differences in their achievement, attitudes, and self-concept may be due to the differences in their presecondary learning experiences; and
- The data-gathering instruments that I prepared for this study, which have not been submitted to standard validation procedures, would provide data relevant to the questions raised.

The population for the follow-up research activities consisted of secondary school students and leavers who had taken the Soutele test in February-March 1978. The total comprised 375 level 5 and 315 level 6 Impact pupils and 430 grade 5 and 378 grade 6 non-Impact pupils. The intention was to obtain data from the total population; however, this was not possible. Some of the pupils had moved to other provinces and were difficult to follow up. Consequently, of the total 690 Impact pupils and 808 non-Impact pupils, only 483 and 437 respectively, were reached for data. These represent 71% and 54% of the Impact and non-Impact populations.

The Impact and the non-Impact graduates who were contacted were studying under the conventional learning system in their respective communities. Therefore, they were exposed to the same learning experiences and to the same teachers within the same schools.

The Soutele tests were used as a basis for determining the comparability of the Impact and the non-Impact groups. They were prepared and validated by the Ministry of Education and Culture and included a nonverbal ability test, an achievement test for grade 6, an attitude questionnaire for grade 6, and information about pupil inputs. These tests had been administered to the level 5 and 6 Impact pupils and the grade 5 and 6 non-Impact pupils in February-March 1978 upon the initiative of Innotech by an external group consisting of representatives of the Bureau of Elementary Education of the Ministry of Education and Culture.

The academic achievement tests of the Philippine Educational Placement Tests were also used. These included basic learning skills in sequential order required for the grade or year level in three subject

areas: communication arts in English, communication arts in Pilipino, and mathematics.

The test for communication arts in English attempts to assess the students' verbal knowledge, abilities, and skills in word usage, grammar, punctuation, capitalization, spelling, letter writing, comprehension, vocabulary, and effective communication. The test for communication arts in Pilipino measures more or less the same abilities, knowledge, and skills.

The test for mathematics measures the students' ability to deal with numbers. It also attempts to assess skills in using mathematical processes, solving problems, reading, interpreting graphs and scales, and comparing quantities.

As a complement to the tests, I prepared a data sheet, an interview schedule for dropouts, a self-concept questionnaire, an attitude questionnaire, and an interview schedule for parents.

The students' data sheet aimed to gather data on the occupation of parents, the grades of the student for the preceding and the current curriculum years, and the teacher-adviser's ranking of the student in terms of academic performance.

The interview schedule for dropouts was used to gather data on reasons for leaving school; the grade level completed prior to leaving school; the postschool experiences, if any; exposure to media; and job training, if any.

The self-concept questionnaire was actually a series of four questionnaires with similar content: the student's self-report questionnaires, the worker's self-report questionnaire, the teacher-adviser's checklist, and the employer's checklist.

These instruments were designed to measure the subjects' self-concept as reflected by their perception of their physical presentation, of their interaction with the environment, of their interaction with peers, and of their interaction with teachers or employers.

The attitude questionnaire was devised on the basis of the Table of Specifications for the Attitude Inventory in the Soutele instruments. It sought to determine the subjects' willingness to perform roles in the social, moral, and economic development of the group where they belong; willingness to perform manipulative work and similar responsibilities at home and in the community; attitudes toward moral issues, social and economic policies, and practices in terms of public welfare; and attitudes toward independent work. The interview schedule for parents sought to obtain data on the parents' perceptions of Project Impact in terms of their child's achievement, personality development, self-discipline, and study habits.

As a measure of the significance of the differences in the academic achievement of the Impact and the non-Impact students and leavers the *t*-test of correlated means was used; of the differences between the Impact and the non-Impact students in terms of the teacher grades, the *t*-test for two independent groups was used.

To determine the significance of the differences between percentages of the Impact and the non-Impact students' responses to each item in the self-concept and attitude questionnaires, I used the critical ratio test of significance between uncorrelated percentages.



## DEFINITIONS OF THE VARIABLES

Individual characteristics of the subjects refer to the mental ability, sex, and chronological age as of March 1981. In the study, "normal" age groups were considered to be 13.5-14.5 for first-year students, 14.5-15.5 for second year, and 15.5-16.5 for third year. Students who were outside these groups were considered either underaged or overaged.

Postschool experiences refer to the jobs that the leavers held from the time they left school until the time they were contacted for the follow-up data. Achievement was indicated by the students' and the leavers' scores in an academic achievement test in English, Pilipino, and mathematics. Attitude was indicated by the students' responses to the statements presented to them in the attitude questionnaire.

Self-concept was indicated by the responses of the students and the leavers, and of the teacher-advisers or employers to the statements on the subjects' physical presentation, interaction with environment, interaction with peers, interaction with teachers-employers.

## FINDINGS

There were significant differences in the achievement of the Impact and the non-Impact students in the academic achievement tests in second year Pilipino, at a 0.01 level of probability, and in third year English, at a 0.05 level, in favour of the Impact groups. There were no other significant differences in the achievement of the Impact and the non-Impact groups.

In terms of teacher grades, there were no significant differences in the achievement of the Impact and the non-Impact first-year and second-year students in English, Pilipino, and mathematics; or in the achievement of the third-year Impact and non-Impact students in English. But there were significant differences in the achievement of the third-year Impact and non-Impact students in Pilipino and in mathematics, at a 0.05 level, in favour of the Impact students.

Impact and non-Impact students in first-year secondary school did not differ significantly in their perceptions of their own presentations or their interaction with their environment. However, a significantly higher percentage of non-Impact *vs* Impact students replied positively to the statements "I usually understand when my teacher explains things to me" and "I respect my teachers." In contrast, a significantly higher percentage of Impact students responded positively to the statement: "I can usually finish my work without so much help from my teacher."

Among second-year students, Impact students were significantly more positive about their physical presentation in three of six items: "I try to speak clearly so that others can hear," "I usually pay attention to whatever I do," and "My posture makes me look awkward." Also they were significantly more positive in their response to the statements: "I use books and materials carefully" and "Rules and regulations are necessary for my school," whereas they replied negatively to the statement: "I do not usually return books and materials to their proper places after use" significantly more often than did non-Impact students.

Other significant differences among second-year student responses that favoured Impact students were among replies to the statements: "I usually try to do my share of work in the class," "I like to do things that my teacher tells me to do," "I respect my teachers" (in contrast to the trend among first-year students), and "I do not like to volunteer to do things for my teachers."

It is especially noteworthy that among third-year students, significantly more Impact students again responded positively to the statement "I try to speak clearly so that others can understand me."

Likewise, third-year Impact students again acknowledged the need for rules and regulations in the school and a significant percentage responded positively to "I usually understand when my teacher explains things to me," "I can usually finish my work without so much help from my teachers," and "I respect my teachers," and negatively to "I do not like to volunteer to do things for my teacher." Teacher-adviser assessments painted an especially positive picture of first-year students from the Impact school system. Significantly higher percentages of Impact students were rated positively for the statements: "moves about with ease and confidence," "shows interest in learning," "uses books and other materials carefully," "uses learning materials independently," "returns books and materials to proper places after use," "spends vacant periods doing homework or assigned tasks," "tries his or her best at anything that has to be done," "shows resourcefulness and creativity in group work," and "initiates group activities."

The teacher-adviser assessments for second-year students were also as encouraging, Impact students being rated positively significantly more often for physical presentation and for interaction with teachers. However, the numbers of positive assessments were fewer for the second-year students and were even fewer for the third-year students.

The students' answers to the attitude questionnaire were revealing and favourable in many respects for Impact, significantly more positive responses being received for the statements: "If the neighbors threw a dead rat into the street, I would tell them to pick it up and bury it," "If the principal asked the students to evaluate the performance of their teachers, I would make an honest evaluation," "If my group finished the work earlier than other groups did, I would volunteer to help them," "If an old woman had difficulty in getting into the passenger jeepney, I would help her," "If the class put up a community project and the problem is the money to get the project started, I would ask the group to discuss ways of raising funds for the project," "If the teacher returned a theme with comments to improve it, I would inquire on how best to improve it," "If I came home and found there was no water in the jar, I would go and fetch some," and "If my sister or brother were supposed to prepare supper for the family but could not come home early for a very important reason, I would prepare supper for the family."

There were three major reasons given by respondents for leaving school, with economic reasons heading the list. Inability of parents to support schooling (37.8% Impact, 32% non-Impact); need to help parents in their work (18.4%, 19.5%); and need to work and earn a living (7.8%, 9%) were the most common. Lack of interest in studies (22%, 28.5%) and

low grades (6.7%, 3.5%) were also factors cited, and marriage (4.8%, 0%) and ill-health (1.9%, 1.7%) were mentioned.

There were no significant differences in the Impact and non-Impact leavers' performance on achievement tests. However, the Impact leavers did have better self-concepts and were judged by their employers to be more creative and more willing to try new techniques than were non-Impact leavers.

The 16 Impact leavers who were contacted during the follow-up activities were engaged as common labourers — nurse's aide, housemaid, workers in a shellcraft factory, storekeeper, helpers in a building construction group, helpers in a welding shop, and farmhands. The 15 non-Impact leavers who were working at the time of the follow-up activities were also engaged as common labourers — jeepney conductors, contractual workers, workers in cottage industries, and farmhands.

There was no way to determine the relationship between the nature of postschool experiences and achievement in literacy and numeracy skills because not one of the "employed" Impact and non-Impact leavers took the academic achievement test administered in December 1980.

The parents who were interviewed in the three Impact sites felt that the Impact system produced better literacy skills and more cognitive learning in less time than did traditional schooling; encouraged leadership traits and the overcoming of inferiority complexes as well as stage fright; and promoted independent study habits and self-discipline.

Some of the parents' comments pointed out their misgivings about the system: many did not believe that pupils could acquire the basic literacy skills from programmed teachers; many believed that there could be no substitute for a good teacher, not even the best module; many feared the lack of discipline in the school, with children moving around the classroom at will; and those whose children were slow learners complained that their children were taking longer than the standard 6 years to finish elementary school. There were also complaints that the children did not have an opportunity to acquire speaking skills because they spent too much time reading modules.

## DISCUSSION

The findings on the Impact graduates and leavers' performance in academic achievement and their achievement in terms of teacher grades and self-concept have been valuable to Impact field staff. They provide assurance that the developmental activities have not hurt the subjects.

Although the modules in Impact were based on the prescribed curriculum by the Ministry of Education and Culture, the Impact writers had to weed out repetitious objectives and to reorganize them to achieve a more feasible and logical continuum of knowledge, skills, and attitudes. Therefore, there was the risk that the Impact students did not have exposure to the same set of objectives that the non-Impact students did. But the findings on achievement have shown that the streamlined Impact continuum has provided the learners with the basic knowledge, skills, and activities needed for further schooling.

The significant differences in achievement, in favour of the Impact students, serve to confirm the belief of the Impact research groups that peer learning through the modules enhances cognitive learning because the psychologic barrier — the inhibitions present in learner and adult interaction — has been removed.

The positive self-assessment by Impact students and leavers on physical presentation in such items as "I try to speak clearly so that others can understand me," "My voice is pleasant to hear," and "I usually pay attention to what I do" and their disagreement to the statement "My posture makes me look awkward" may have been the outcome of positive reinforcement from the Impact management system. Average Filipinos hesitate to say good things about themselves for fear of losing social acceptance. The fact that the learners have achieved a degree of boldness to point out their good characteristics is indeed one achievement of the Impact management system.

Positive answers to the statements "I use books and materials carefully," "Rules and regulations are necessary for my school," and disagreement with the statement "I do not return books and materials to their proper places" are indicators of the Impact students' gains from self-directed activities and from the systematic ways with which the concepts have been presented in the modules.

The positive response to "I try to do my best in my lessons and assignments" and "I can usually finish my work without so much help from my teachers" speaks well of the learners' attainment of independent study habits and sense of responsibility.

The disagreement expressed by the Impact leavers to the statement "I am afraid to talk to my boss" attests to the attainment of self-confidence. Likewise, the teacher-advisers' positive assessment of the learners in the statement "moves about with ease and confidence" could be attributed to the use of positive reinforcement that has resulted in the individuals' positive self-concept.

The teacher-advisers' assessments are indicators that Impact has succeeded in its aim to help the individuals acquire self-direction, initiative, creativity, and resourcefulness through the student-directed learning modes. This finding was confirmed by employers of Impact leavers.

The teacher-advisers' positive assessment of the Impact learners in such items as "volunteers to do things for the teacher" and "is respectful and courteous to teachers" shows that the Impact learning modes have helped to retain in the learners the cherished value of social acceptance through smooth interpersonal relationships.

The diminishing number of positive answers for the second- and third-year Impact learners rings a warning bell that the affective gains from a more democratic learning environment may be lost through the years in an authoritarian learning environment.

## CONCLUSIONS

The findings show that the graduates of the Impact schools are equipped with the needed knowledge, skills, and attitudes for further schooling and that they compare favourably with graduates of conven-

tional schools as shown by evaluation of their performance or achievement, self-concept, and attitude. Likewise, Impact leavers compare favourably with non-Impact leavers in achievement, self-concept, and in the nature of their postschool experiences.

Despite the limitations of this study, the findings indicate that:

- The learning modes in the Impact system have enabled learners to gain as much knowledge and as many skills and positive attitudes as are gained by those who are under the direction of professionally trained teachers;
- The Impact modules, which were prepared by classroom teachers rather than expert curriculum writers, have met the objectives of basic education as well as the professional classroom teachers have;
- The Impact learning system, which is more economic than the conventional school system, is just as efficient as the conventional system; and
- The fear of the parents about the inefficiency of programmed teaching and of the modules is not supported by the achievement and the outcomes of this evaluation.

Therefore, the leaders of the Philippines educational system should consider the wider replication of Project Impact in areas where there are acute problems of lack of teachers, lack of school buildings, and inadequate supplies of textbooks and other learning materials.

The would-be implementers of Impact in the country and abroad may derive some assurance that classroom teachers, given short-term training in the preparation of self-instructional materials, can come up with modules that can deliver the objectives of education with as much efficiency as the classroom teacher who stands before the class. Furthermore, the resistance put up by parents against the innovation may be minimized if they are given empirical data to show that the components of the Impact system achieve as much as the conventional system does.