



Teaching yourself in primary school

Report of a seminar
on self-instructional programs



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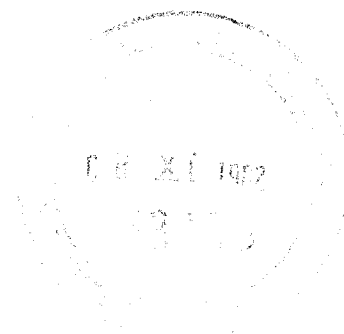
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Research and Development Activities in Primary Schools

In the middle and late 1970s, IDRC funded no fewer than four national experiments in self-instructional technologies at the primary school level (Table 1). The first two were in 1974 in the Philippines and Indonesia with Project Impact and Pamong. These were followed in 1978 and 1979 by similar projects in Malaysia (Inspire) and Jamaica (Primer). Meanwhile in Canada in 1973 the Institut national de la recherche scientifique (INRS) in Quebec was independently developing a very similar experiment in self-instructional primary education, Project SAGE (Système d'apprentissage géré par l'étudiant). A few years later, at the very beginning of the 1980s, AID (U.S. Agency for International Development) began assisting the Liberian government to replicate elements of the Impact system in a program of improved efficiency of learning (IEL), and, with World Bank aid, Bangladesh started, as part of the Sector Loan for Education, to experiment with a similar mix of components.

The planning that eventually led to Impact and Pamong goes back to 1971. A historical account of Project Impact — *Educational Innovation in the Philippines* — was written by Pedro Flores and is available from IDRC (IDRC-TS36e). It is perhaps appropriate to review some of the research aspects of the years since the early projects' inception. One rationale for doing so is that the projects now straddle all the different stages of development. Those in the Philippines, Indonesia, and Canada have completed their pilot phases and have started wider replication in their respective provinces, regions, or school boards. In Malaysia and Jamaica, by contrast, the new instructional materials are just beginning to move into the experimental schools. Meanwhile, Liberia and Bangladesh are only commencing the stage of curriculum development. Insights from the earliest experiments could benefit the more recent projects, and, as a corollary, data that the early projects had neglected, or had been unable, to collect through pressures of program implementation could be acquired in a slightly different form from the recent projects.

RESEARCH VERSUS DEVELOPMENT

Although it is common to talk of R and D, it is important in a set of projects like this to recognize an almost inevitable tension between the

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Table 1. Overview of self-instruction experiments in the Philippines, Indonesia, Malaysia, Jamaica, Liberia, and Canada.

Project name/ country	Year started/ initial experimental schools	Grade levels/ subjects covered	Instructional media used ^a	Products developed	Stage of development (as of June 1981)	Donor/ coordinating agency ^b
Impact — Philip- pines Instructional Management by Parents, Community and Teachers	1974; 5 rural schools	Entire primary grades; almost all subjects	Programed teaching; self-learning; peer- group learning	Programed teaching guides; curriculum guides; self- instructional management guides	Expanded tryout of the system by various regions of the country (33 schools)	IDRC; SEAMEO- Innotech; Ministry of Education
Pamong — Indonesia Pendidikan Anak oleh Masyarakat, Orang tua Murid, dan Guro (Indonesian translation of words making up Impact)	1974; 4 rural schools	Entire primary grades; almost all self- learning; peer- group learning school dropouts	Programed teaching; self-learning; peer- group learning	Programed teaching guides; self-instructional modules; tutors' guides; manage- ment guides	Expanded tryout in Bali, Java, Kalimantan, and Sulawesi	IDRC; SEAMEO- Innotech; BP3K; AID
Inspire — Malaysia Integrated System of Programed Instruction for Rural Environment	1978; 6 rural schools	Grades 1-3; all subjects	Programed teaching (teacher-mediated)	Programed teaching guides	Experimentation in 15 schools (grades 1 and 2); materials for grade 3 being developed	IDRC; Ministry of Education; Universiti Sains Malaysia

Primer — Jamaica Project for Reshaping and Improving Management of Educational Resources	1979; 5 rural schools	Grades 1-6; English and mathematics	Programed teaching; peer-group learning; self-learning	Integrated con- tinuum curri- culum; self- instructional modules; teachers' guides	Experimentation in grades 1, 2, 4 Ministry of Education; Youth and Sports
IEL — Liberia Improved Efficiency of Learning	1979; 10 rural schools	Grades 1-6; all subjects	Programed teaching, grades 1-3; self- learning, 4-6	Self-instructional modules; pro- gramed teaching guides	AID; Ministry of Education
SAGE — Canada Système d'Appren- tissage G��r�� l'��tudiant	1974; 2 urban schools	Grades 4-6; English, French, mathematics	Self-learning with printed materials, tape recorders, slides	Teaching-learning units including evaluation for students and teachers (guides)	Institut national de la recherche scientifique (INRS); Canada Council; Secretary of State (Canada); Ministry of Education of Quebec

^aProgramed teaching is instruction done by a trained teacher (teacher-mediated) or a trained older pupil using programed teaching guides; self-learning is learning by self-instructional modules (module-mediated); and peer-group learning is small-group learning among pupils of the same grade level (peer-mediated) using self-instructional materials.

^bSEAMEO = Southeast Asian Ministers of Education Organization; Innotech = Center for Educational Innovations and Technology (one of the regional centres of SEAMEO); BP3K = Office of Research and Development for Education and Culture; IDRC = International Development Research Centre (Canada); AID = United States Agency for International Development.

research and development activities of each program. In large curriculum-development projects, converting the primary school subjects into carefully sequenced modular instruction for the children (or for the teachers, in the case of Malaysia) is an extremely labour-intensive endeavour. Teams of writers have to be assembled, trained, motivated. Pilot testing has to be arranged in schools that are agreeable to the innovation; once materials begin to be distributed, the project gets locked into a series of deadlines and delivery dates for the new modules, as term succeeds term, and the project is extended through other grades in the school system.

It is a situation inimical to research and reflection. Careful calculation of the impact of the new is frequently subordinated to the all-consuming process of program management and implementation. The project leader is talked of loosely as principal researcher as if he or she is similar to an investigator in any other research project. Nothing could be further from the truth. In evaluation research, for example, the investigator assessing the influence of some innovation or other can quietly develop appropriate instruments, apply them and any other measures to the situation under analysis, and then proceed to reflect on the accumulated data. In development projects, by contrast, the team leader is obliged to be a mixture of personnel manager, animateur, local politician, and priest as well as researcher.

Contrary to the traditional view that research parallels the development activities and that in due course research results are conveyed to ministries for policy decisions, the real process of dissemination begins on day 1. If ministries, teachers unions, and local bureaucracies are not incorporated early, and if contacts are not maintained as ministers and their advisers rise and fall, the project may not long outlive the end of its foreign funding. The development research leader is only too aware that research results are only one of the many balls he or she is trying to keep in the air at the same time; indeed it can frequently be dropped without anyone noticing. Not so the module production line or the morale of teachers in the pilot schools. If the children or teachers vote with their feet from the pilot schools, the project is finished overnight.

The many implications of this tension between development and research need to be recognized.

THE TIMING OF RESEARCH IN A DEVELOPMENTAL RESEARCH PROJECT

The problem is principally that organizing rigorous evaluation research or quasiexperimental conditions is difficult at the time the project is being put into place. This is not to deny that other kinds of research are being employed inevitably in the very process of curriculum development. These, however, are types of instrumental research, inherent in the selection of the modular system, and the sequencing and ordering of the myriad parts of the new curriculum.

The projects really require to be fully operational before it is appropriate to mount an investigation of their effectiveness with evaluation or quasiexperimental research. Only too often, however, funding agencies demand an evaluation of their projects while they are still settling down. There are certainly some kinds of data that do need to be collected from the very early days of the intervention, but fre-

quently the attempt to produce a whole apparatus of control and experimental schools from the commencement of the research can be misguided. It could be argued instead that educational development projects need to be protected from the exercise of experimental conditions in their first few years. In particular, they need to be protected from the view that in year 2 or 3 a single achievement test between the control and experimental schools can determine whether the project has "succeeded."

Now, 7 or 8 years after the first projects started, there are some extremely fascinating research questions that need to be tested in the Impact and Pamong schools. They probably could not have been investigated much earlier. But now that in the original sites, the projects have achieved a degree of local ordinarieness, elements of the system can be compared and contrasted with practices in nearby schools without much fear of contamination or bias.

Whereas 7 or 8 years may seem too long to wait, given that primary school lasts 6-7 years, it may almost be too short. The first children to have been affected by the experiment from grade one are just leaving school and entering the secondary level of education; this move may well be the first real test of an alternative primary school system. The reality in far too many projects and curricular initiatives is that the enterprise has been abandoned and replaced by another model long before one cohort of children has completed a single cycle.

TWO-YEAR VERSUS TEN-YEAR PROJECTS

A full development and research cycle is likely to be nearly 10 years in a curriculum innovation of the Impact type. But research projects tend to be funded for only 1-3 years; it is consequently difficult to argue for anything approaching the length of support needed satisfactorily to reach the end of the final research phase. As the costs for the development phase of any educational project continue to escalate, so it becomes difficult for foundations and research funding agencies to support the whole cycle. The tendency is for research funds then to go toward only the evaluation phase of the larger agencies' projects. Researchers find themselves evaluating, often on a consultancy basis, projects over whose development they had no say and, perhaps, no interest. In this dichotomy between development project and evaluation activity, the researcher turns consultant and frequently reviews in a few months projects whose detailed historical development is lost to research.

In the Impact and Pamong projects, by contrast, some of the individuals earlier involved in the development of the sites are only now producing research on the systems with which they have been associated. Haris Mudjiman has been investigating the effectiveness of the peer-tutoring system as one of the elements in the Indonesian experiment. But he has done it at a point when the Pamong schools have moved from experimental to ordinary primary schools. Similarly, Rosetta Mante has sought to capture through a tracer study of Impact school leavers, the difference their early experience made when they reached secondary schools. Third, there is the historical analysis of Pedro Flores.

EXPERIMENTATION AND ORDINARINESS

I have suggested that, despite the importance of long-term commitment to a research activity, pressure to demonstrate the workability of the intervention frequently comes quite early from the funding agency, from the government, and often from the researchers themselves. Controlled situations are arranged and baseline data collected to demonstrate at some critical point in the project a comparison between the pilot and control schools. There have been some ingenious attempts in the present group of projects to work with control schools. But the leaders have agreed that it is often difficult to ensure a fair comparison. Should they tell the control schools what they are? "No," says Malaysia, "the control schools will then try extra hard to prove that they are better than the experimental schools." "Yes," said Jamaica, but found that in one case many control schoolchildren began to transfer and enroll in the experimental schools; thus the intended control school no longer functioned as a true control.

Occasionally, there is interference with the experimental schools, as in the Philippines, when in the early years local jealousies led officials to offer Impact teachers better jobs "down the line," i.e., nearer to the city, in the hope that the experiment would be weakened.

Quite apart from these local incidents, the real methodological problem with such experiments is that publicity pours on the experimental schools. In these experiments, the entire curriculum was being reorganized, the structure of the school altered to allow for small group work outside the classrooms, and the teachers being given much greater responsibility in quite different circumstances. As all the projects except SAGE in Canada were externally funded, there was a stream of foreign professional visitors from the donor agencies, as well as educationalists anxious to see whether self-instruction and the use of older children as teachers allowed Impact to achieve a dramatically different student-teacher ratio. In a situation where the ordinary local schools may seldom see an inspector, let alone a foreign adviser, it becomes difficult to create conditions for a genuine comparison. (In an attempt to reduce this particular inequity, the Malaysian researchers intend to visit their control as often as their experimental schools.)

Usually the critical assessment of success takes place when the foreign funding is still operational and before the experiment has been localized. Too often, also, the comparison is dependent on a single test of pupil achievement. This may well be all the proof that a ministry can digest, but it offers a very narrow angle for examining the variety of change in schools, teachers, and individual classrooms. Now, when the older experiment sites in Canada, the Philippines, and Indonesia have become quite accepted and ordinary in the eyes of children and parents, is a much more appropriate moment to assess the total system at work.

CUMULATIVE RESEARCH ON SELF-INSTRUCTION

Not only are the seven different projects at different stages of development, but they are employing somewhat different mixes of modularization, self-instruction, peer teaching, and pupil teaching. There is, nevertheless, a sufficiently common core for it to be worthwhile

collecting and sharing information about their development and research experience. A staggered informal network of this kind can profit from the insights and analysis of each group. By no means is it only a matter of the younger projects' learning from the old, but, as evaluation methods have changed during the 7 or 8 years, it is also a matter of the older projects' planning to apply research questions to their now ordinary sites that were never considered worth asking during their development.

For example, the main lines of concern in projects Impact and Pamong were to measure cost and efficiency. Yet, the unintended consequence of a system that gives children considerable control over the organization and execution of their own learning may be that children gain a degree of independence and self-sufficiency that may be very important in home study, later learning, or following the myriad types of written instruction associated with modern life. One of the important but, as yet, unmonitored aspects of most of these projects may be that learning is enjoyable. Unlike the structured ranks of many upper primary school classes, children can learn with their friends and switch to a new subject when they need to without waiting for the whole class. "It's fun," admit Quebec children quite openly.

Perhaps a different approach from the classical apparatus of baseline survey, pretest, and posttest of educational achievement is needed. One cannot just add some test of attitudinal change either. Rather, what is needed is a means for the steady accumulation of information and evidence that will allow one to answer questions about the influence of the project. For example, what are the changing attitudes of teachers to a system that makes them intermittent advisers to individual children on problems that are no longer all taken from the same lesson or the same two pages? Do they really get more time for working with slow learners or difficult children, or do the brighter children continue in self-instruction as in teacher instruction to dominate the teachers' attention? What is the situation 8 years after the first projects began? Has the pattern of teacher mobility been as marked in Pamong, Impact, and SAGE schools as in traditional schools? Have teachers, after a year or so in the new system, gone back to traditional classrooms? In Impact's Naga sites the present teachers appear to have stayed for long periods, several for 6-7 years. Detailed interviews might reveal a whole layer of the impact that at present we barely understand.

Parental feedback is another vital research concern. To what extent, for example, can parents participate more usefully in homework when they can see from the modules exactly what is being taught and no longer run the risk of helping their children by a technique in writing or arithmetic that is different from what is used in schools today?

Modular instruction may suit some school subjects better than others. In particular, there may be reason to believe that math requires a greater degree of teacher explanation and advice than language, social studies, etc. Rosetta Mante has mentioned in a personal communication that whenever she visited her several schools, she had the distinct impression that teachers were advising individual students in math. No research was done on this, but evidence collected on requests for teachers' help might be a good introduction to examining what subjects

can be largely acquired through self-instruction and which need a stronger mix of formal explanation by the teacher.

One outcome of the attempt historically to accumulate evidence on particular schools could be monographs on an individual school in the Philippines, Jamaica, or Canada. To some extent, such individual exemplars of the system in action can be done retrospectively, especially as there has been teacher continuity in many cases and the location of expupils presents no particular research problem. A case study of this sort could be of considerable value to teachers in newer sites in the same country, as well as in replication of the project nationally.

Development projects are much more visible than research projects. Consequently, the maintenance and replication of a development project represent a much more political issue than does the dissemination of research. If a ministry of education or a regional education office decides against replication or against maintenance of the original sites, the impact is vastly different from a ministry's reactions to a research report. Closing down a development project after the end of external funding is not uncommon and is frequently an indication of how far the project had become adopted by the local and national officials during its development phase. Because the decision to maintain or drop a development project is qualitatively different from reacting to research results, it is no wonder that research issues initially take second place in development projects.

I have argued here that the tension is inevitable between the two and have also suggested that the classic control-group research linked to pre- and posttests is not necessarily the most appropriate way to accumulate evidence on development projects.

There are many alternatives available that perhaps over the long run will produce richer data or evidence with which to interpret more satisfactorily the results of a single achievement test. But in almost all cases the alternative methods are much more labour-intensive than is the one-shot pre- and posttest. As the project leader cannot devote more than a fraction of his or her time to research, it is essential to build into the project a full-time researcher, responsible for coordinating with the principals and teachers the institutionalization of the research. If research can be built into the new system in ways that monitor peer groups, types of teacher remediations, etc., then it can provide information for improvement on a school-by-school basis as well as accumulating the material needed for a more systematic study later on. At the moment, there is still a tendency to view research as a series of (happily) brief incursions by outsiders into the school system. It should more appropriately be seen as a form of participant monitoring of the system from within. Ideally, the person (researcher) responsible stays in the field sites and does a research apprenticeship as a teacher in the system for 2-3 months beforehand.

In the case of these seven projects, in addition, there would now be value in arranging some way whereby one person could for a period be appointed as a broker or circuit rider to disseminate information from site to site and to help in securing attention to the interactive potential of research, development, and dissemination.