Teaching yourself in primary school
Report of a seminar on self-instructional programs
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Report of a seminar on self-instructional programs held in Quebec, Canada, 12-15 May 1981
Contents

Preface 4
Foreword 5
Participants 7
Introduction
  Research and Development Activities in Primary Schools 9
  Self-Teaching Programs: a New Technology and a
  New Philosophy 17
Development
  Adaptation of Impact’s Instructional and Training
  Methods in Primer 23
  Liberia’s Improved Efficiency of Learning Project 30
  Origins of Projet SAGE and its Evaluation Scheme 41
Training
  Assessing the Impact and Effectiveness of Project Inspire’s
  Educational Materials 49
  Teacher Training for SAGE, a System of Individualized
  Instruction 60
Evaluation
  An Evaluation of the Role of Students and Teachers in a Class
  Using SAGE 67
  Multiple Outcomes and Perspectives in the Evaluation of
  Project Impact 72
  Effectiveness of Learning Modules and Peer Tutors in Student
  Learning 81
The Future
  Dissemination and Utilization of Education Research: the Impact-
  type Projects 93
  Research and Evaluation in the Project Development Process 98
References 105
Research and Evaluation in the Project Development Process

The papers in this volume make clear the variety and complexity of self-instructional learning projects. Casual views of different project classrooms reinforce this picture. The programed teacher (or older pupil) teaching rote reading lessons to younger pupils under a thatched roof in Sapang Palay in the Philippines little resembles the individual pupil working through a lengthy series of modules, work sheets, and games in a self-contained French-language class in Quebec. But all the projects share a delicate balance and frequent tension between the development of the project (module writing, teacher training, test construction) and the research and evaluation needed to improve it, understand it, and ultimately justify it. “Research” and “evaluation” are closely related activities. The former implies questioning how and why an innovative project works; the latter assesses to what extent the project is actually being implemented and examines what kind of changes, if any, it has produced. The term research is often used here to include both kinds of activities. Too much focus on project development leaves little information on what works and why; as Kenneth King writes in the introduction, such a focus is “inimical to research and reflection.” But too much concern for research can leave the project itself uncompleted and — worse yet — unattractive to donors and policymakers who need to see results and upon whom future dissemination rests.

The tension between research and development activities as described in this book is a problem of efficiency more than of political persuasion or theoretical perspective. It is a tension that results when governments wish to institute reforms rapidly and inexpensively, and funding agencies wish to see quick returns on their investments so that research and comprehensive evaluation activities are often neglected.

There are several reasons that such neglect is unfortunate — why a healthy dose of research and evaluation is necessary in development projects of this type. First, some research is needed to demonstrate to the decision-maker and donor that the project works and is worth continuing.

Research is also needed for improvements or refinements that make the project more efficient and less expensive, more popular with and relevant to target populations; to uncover information on project processes and outcomes (e.g., noncognitive) that, in the long run, may be

Sheldon Shaeffer, Social Sciences Division, International Development Research Centre, Ottawa, Canada
more compelling reasons for continued project development and dissemination than are simple changes in cost and achievement; and to provide data and insights that can help personnel in similar projects elsewhere and that can shed light on more theoretical, even academic, issues related (in this case) to self-teaching processes.

The attempt to fulfill these tasks in the midst of writing modules and correcting achievement tests leads to tension. Some relief from the tension is possible if a design for research and evaluation strategies is incorporated in the project from its very beginning, if it is prepared before the project starts, if data are gathered from the first day of development or sooner, if flexibility in altering the design — expanding it, tightening it, redirecting it — is built into the development process, and if one or more project staff are assigned full time to research. The major focus of this chapter is on the kinds of issues that should be considered in the construction of a design for comprehensive research and design activities. The crucial question is what kinds of data should be gathered at which stages of the development process by what kinds of research and evaluation. What aspects of the project, in other words, should be examined and explained during its entirety, throughout planning, implementation, and dissemination, and how should this examination be done?

DESIGN ISSUES IN DEVELOPMENT PROJECT RESEARCH

The answer to this question addresses:
- The kinds of information needed about the project's context, assumptions, and goals;
- The kinds of data needed on resulting changes and on how these changes occurred; and
- The research strategies and methods required in an assessment of the projects and an understanding of how they work.

DATA ON PROJECT CONTEXTS, ASSUMPTIONS, AND GOALS

An accurate description and assessment of any self-instructional project cannot be made without a clear understanding of the setting in which it began, the assumptions about teaching and learning upon which it is based, and the rationales for its particular goals. Such information is needed to put any analysis of the project's development and ultimate impact upon firm contextual, historical, and theoretical ground; change is better understood if one knows where it came from. Any design for research and evaluation should, therefore, include ways to obtain such data — the earlier, the better.

Though considerable information is available on how each of the self-instructional programs described in this book was initiated and developed — records of ministerial meetings, proceedings of planning sessions, and stories of battles with various bureaucracies — there is much less information on project contexts, assumptions, and rationales. Yet there are important differences that affect how each project began and has developed. The educational context of Liberia, for example, is very different from that of Malaysia. In Liberia, fewer than 50% of its
primary school age children are in school and only 30% of its teachers are trained, compared with almost 100% in both categories for Malaysia. Likewise, the cultural context of the Philippines is very different from that of Quebec; family harmony and peer cooperation are stronger values in the former than in the latter. Such differences — educational, cultural, social, economic, bureaucratic — are important determinants of project genesis, development, and ultimate success or failure and, therefore, should be carefully described.

Similarly, each project is influenced by rather different — but usually unspoken — assumptions about the importance of education; the appropriate roles of pupil, teacher, and parent; and the ability of teachers. Malaysia looks to a national examination at grades 5 and 9 as the major criterion of success for the education system; in Liberia, the school is presumed successful if it leads to basic literacy. Parents are assumed to be an integral part of Primer and Impact but are ignored in Inspire; pupils are expected only to learn in Malaysia but to be able to teach in the Philippines and work closely with peers in Indonesia. And whereas the modules are seen as a teacher-proof curriculum in rural Malaysia, where poor teaching is assumed to be a major cause of school failure, they are seen in Quebec as means by which teachers can be liberated from mechanical tasks and can spend more time in creative service and supervision. Again, these assumptions should be fully described as important data against which a project's development and future success can be analyzed.

Finally, related to these assumptions are the rationales for explicit and implicit project goals — to produce autonomous, responsible pupils, as in Quebec, or to develop systematic, organized learners in Indonesia. Why were these goals selected and not others? Who made them and how have they been altered in the course of project development? A description of these rationales from a historical and contextual perspective is an important part of any final assessment of these self-instructional programs and of individual project achievements.

DATA ON WHAT HAS CHANGED — AND WHY

If the contexts, assumptions, and goals of each project are systematically described, it should be easier to understand what has been achieved and how it was achieved. The success or failure of explicit goals as well as the appearance of unanticipated consequences should also be more easily explained. The analysis of changes resulting from the project, however, requires much more data — of many different kinds gathered throughout a project. It is not enough for the harried project developer to depend on achievement test results. If these prove inconclusive, what other outcomes can be used to rationalize further project development? The collection of data that indicate success or failure in reaching other desired outcomes must be planned in the original design for research and evaluation. A design for measuring change should include three levels of analysis.

At the level of the education system, one can examine whether and how these projects influence or require changes in texts and other teaching materials (whether the modules replace or complement texts), teacher training (if 2 weeks are really enough to train an IEL teacher
in Liberia, what happens to colleges of teacher training), teacher supervision, and system-wide enrollment, absenteeism, and dropout rates. At this level, one can also analyze costs. Are these innovations cheaper to begin, maintain, and renew than the systems they replace? Finally, do the changes brought about by these projects make it more or less easy to integrate them into the traditional system?

At the school and classroom level, other criteria of change can be assessed. Can the principal handle the new role of being a manager of managers? Can adequate records be kept and student evaluations be based on the new procedures and new tests? Are the modules available to the students or locked away with the textbooks? Most critical, perhaps, is whether there really is a new structure to the class and a new climate in the classroom. Do children really work alone or in groups, with adequate order and organization; and do the teacher and the aide really manage, guide, correct, and remediate or — like so many other innovations — has this one also been overwhelmed and subsumed by traditional classroom structure and environment?

Finally, at the level of the individual, the most complex criteria of change must be examined — in academic skills, cognitive growth, affect, and behaviour. Have students learned? Are they more cooperative, independent, motivated, and honest? Do they have improved self-esteem? Are they better citizens and leaders? Are they happy? Are teachers less bored, more enthusiastic, more concerned with individuals — and are they happy? And are parents and the surrounding community more active in educational affairs or at least more supportive of the schools? Are they satisfied with the system? This last question is an important measure of success in many politically volatile developing nations.

The possibility of differences in impact of self-teaching systems on children and teachers of different aptitude, character, and background is critical. It may be enough to demonstrate that the use of modules generally raises grade averages (or at least maintains them) but it may be more important to show that they work best for the weakest (or strongest) student, the least-skilled (or most competent) teacher. The importance of this kind of information should be recognized in the design of research for such developmental projects.

Although difficult, it is not enough to measure change in systems, classrooms, and individuals resulting from new educational projects. Researchers must also be able to explain how such change occurs, why a project succeeds or fails. Is it the content or the structure of modules? The climate or the organization of the classroom? The work of teachers or peers? Or simply the presence of new materials, new technologies, and a horde of researchers? In other words, how do the crucial processes and interactions of the system work? What happens during self-teaching? How does a pupil interact with a module? How much time is really spent on academic tasks? And what is the nature of peer-tutoring: who gains most from it and how?

Given different questions, different audiences for answers, and different stages of the development process, one needs very different approaches to research and evaluation. Just as multiple kinds of data are required to analyze multiple outcomes of projects as well as success
or failure, so, too, are multiple methods and measures required to gather the data. An examination of contexts, assumptions, and goals, for example, requires reflective, descriptive analysis. This is best done at the time the project is being developed through extensive notes on early discussions and decisions — about which components of the system to use or adapt, what sample of schools to select, which actors in the school setting to assign to which roles, and what to choose as the primary criterion for success. If such data are not collected as events occur, a more retrospective analysis can be done later through interviews and archival research. The result should be rich in historical, contextual, even philosophical detail.

As opposed to this kind of analysis, the measurement of change resulting from development projects and the analysis of how such change occurs — be it within the system, the local bureaucracy, the school, the classroom, or the individual — require a more complex combination of methods. Though the pressures of development may force the project leader toward the one-dimensional (quantitative) analysis of only one or two aspects of the project (achievement and perhaps cost), many other data can also be gathered.

For one, quantitative censuses and surveys can provide baseline data on community conditions and family lifestyles. The collection of secondary or archival data from offices and schools can provide information on absenteeism, dropout rates, repetition, etc. And questionnaires and interviews, both closed and open-ended, can gather from parents, principals, and teachers their perceptions of what changes have occurred in educational processes and results and, more importantly perhaps, their opinions of such changes. Do they like their new roles, the use of new record-keeping procedures, the new structure and climate of their classrooms? Do they think the system works better for some pupils than for others, for mathematics than for language?

Observation schedules, both structured and unstructured, are a means to determine what actually occurs in classrooms. These can be quite quantitative in nature — counting frequencies of behaviours and interactions or the percentage of time spent "on task" or in various kinds of learning situations. They can also be more descriptive or qualitative through the systematic recording of how the system is being implemented and details of the new interactions being introduced into the classroom and school — microstudies, in other words, of critical aspects of self-teaching.

Descriptive, qualitative methods can also be used beyond the confines of the classroom as a basis for an ethnographic monograph on school, community, and system. Such a monograph — on one or two sites, perhaps — can examine in somewhat broader terms how the project has affected the running of the schools, its relations with the surrounding community, and its "fit" with the surrounding culture. Eventually such a monograph can also examine the problems faced by the project as it is disseminated through and integrated into the larger educational system.

Finally, to complete the list of methods useful in designing research and evaluation for innovations such as Impact, the setting up of the more classical experimental-control group comparison may also be
necessary though such a method can be fraught with difficulties in nonlaboratory conditions. What is important in any such controlled comparison is not only to measure the outcomes in terms of achievement and attitudes of both groups but also to gather data on classroom interactions and teaching methods. Such data will enrich the analysis of why differences do or do not appear between the experimental and control classrooms.

CONCLUSIONS

What might be done, therefore, to resolve some of the inevitable tension between research and development? Much of this tension can probably not be resolved; it is part of the order of things between developer and researcher, ministry official and academic. And some of it may, in fact, be creative, pushing the researcher toward seeking information useful to the immediate improvement of the project and the developer toward considering issues beyond a narrow definition of one project’s success.

To the extent that some of this tension, however, should be resolved:

- A more systematic design for research and evaluation should be made from the beginning of the development process so that the project staff realize what kinds of questions should be asked and answered at different stages of development by different kinds of research and evaluation methods. Such a design must be flexible but not be neglected.
- From the very beginning of the project, its own development should be systematically noted and described: the context in which it grows, the assumptions upon which it is based, the evolution of its goals, and the implementation of its various curricular and management changes. Occasional, sporadic monitoring of the system as it is developed, is put in place, and begins to work is not enough.
- Because in the long run it may be both politically necessary and scientifically important for project personnel to be able to assess outcomes other than those of reduced cost and increased test scores, more attention should be paid to examining both the critical processes of interaction that characterize self-teaching systems and the noncognitive outcomes that might be expected to result from these processes. Especially important in this regard is the question of whether (and how) the system works best for a particular kind of pupil or teacher.

The rather complex research and evaluation needs described above can only be fulfilled if different strategies and different methods are used in the course of the project’s development and implementation. Archival data and classroom observation, classical experiments and ethnographic monographs, censuses and achievement tests all have their necessary place in such evaluation.

Finally, this use of complex, multiple measures to examine the complex processes and multiple outcomes of self-teaching systems such as those described here can succeed only if project developers and policymakers resist the temptation to neglect research in the develop-
ment process. Although the pressures to move on with the development of modules and guides and the use of cognitive tests and costing formulas are great, there are other responsibilities just as great for the comprehensive documentation and analysis of the project development process — responsibilities to the project itself, to be able to improve it systematically based on carefully collected data; to policymakers and donors, to be able to explain why a certain outcome of their investment did or did not work; to project developers elsewhere in the world, to prevent them from rediscovering what has already been learned; to researchers examining the more theoretical and academic issues of self-teaching.

Fulfilling these responsibilities may mean the use of a full-time researcher or research team not distracted by the exigencies of daily project development, the recruiting of university researchers and advanced graduate students to work on these issues quite apart from the development team, or more funds for research from government and donor agency sources alike. The important thing is to start early enough to consider the alternatives so that the inevitable tension between research and development can be reduced to manageable and even useful proportions.