For Official Use **CERI/SFT(2000)1**

Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

OLIS : 20-Dec-1999
Dist. : 21-Dec-1999

Or. Eng.

CENTRE FOR EDUCATIONAL RESEARCH AND INNOVATION

CERI/SFT(2000)1
For Official Use

METHODOLOGY FOR CASE STUDIES OF ORGANISATIONAL CHANGE

ICT and the Quality of Learning: 2nd International Seminar

To be held at the Palais des Congrès, Poitiers
on 14th and 15th February 2000

85803

Or. Eng.

METHODOLOGY FOR CASE STUDIES OF ORGANISATIONAL CHANGE

This document proposes a methodology for studying the impact of information and communication technology (ICT) on school organisations. It was initially drafted by a small group of researchers brought together by the Secretariat and further revised on the basis of suggestions made by the National Research Experts (NRE), meeting in Poitiers, France on 6-7 September 1999 and by feedback at later dates. In commenting on this draft, reference should be made by section number. All comments should be addressed to Professor Richard L. Venezky (Richard.Venezky@oecd.org) and to Cassandra Davis (Cassandra.Davis@oecd.org) at OECD/CERI.

1. Background

1.1 The OECD/CERI ICT Programme, *ICT and the Quality of Learning*, was initiated in 1998 with three major areas: (1) educational software quality in the classroom, (2) public-private ICT partnerships for the marketplace, and (3) research and evaluation of the impact of ICT on schooling and learning. The case studies of organisational impacts proposed here are one major component of Area 3; the others include experimental and quasi-experimental studies of the impact of ICT on learning and an international research network, anchored by a web site (bert.eds.udel.edu/oecd).

1.2 The motivation for the entire ICT programme derives from several sources. First, all OECD countries are making or have already made large investments in hardware, software, and services for bringing ICT into their schools. Policy makers in these countries would like empirical data for directing these investments toward their most productive outcomes. In a world rapidly becoming more and more digital every day, ICT needs to be part of the everyday school experience. Questions such as “Does it work?” are no longer relevant. Modern institutions—businesses, courts, sports organisations, and the like—require the use of word processors, spread sheets, graphing programmes, data bases, and other information-oriented applications. Schools that don’t expose their students to these are failing part of their educational mission.

1.3 But beyond application programmes or tools, computers can function as delivery mechanisms for courses and curricula. The military in many countries, institutions of post-secondary learning, and businesses are making some use of computer-assisted instruction (CAI). How CAI can contribute to statutory (K-12) schooling remains to be determined. However, once again the issue is not “Does it work?” but rather under what conditions and for whom can CAI be useful? What are the undesirable consequences of its use and how can they be avoided?

1.4 Second, ICT has been in some cases a wedge for bringing educational innovations into schools. In a few countries ICT has been associated with standards-based reform and with teaching methods that are more active and more student-based than traditional ones. Policy makers would like to know how ICT can be used for such innovation. These are not the only concerns that policy makers have with ICT in schooling, but they are the primary ones behind the OECD ministers’ call for a programme on ICT and the Quality of Learning.

2. Issues for Investigation

2.1 The goal of the studies proposed here is to understand how ICT can relate to educational innovation. Within the OECD countries two important changes are occurring in K-12 schooling. First, a variety of instructional reforms are under way, driven by a perceived need to reorient schooling from rote learning, shallow but wide coverage, and individualistic learning processes to a focus on higher level skills, problem solving, in depth study, and collaborative learning. These reforms take different forms in different countries. Some are using curriculum standards and performance assessment to drive teachers and administrators to account for the success of all learners, including especially those traditionally marginalised. Other countries are depending more on improved staff development and revised curricula, emphasising learning to learn ability as well as interactive, collaborative skills. Life-long learning is also a major concern of the OECD countries, although policy and programs to stimulate and improve this area are not as visible as K-12 efforts.

2.2 In parallel with educational reform, and sometimes indistinguishable from it, is the educational ICT revolution. Every OECD country is rushing to install networks in schools, connect them to the Internet, and ensure a workable configuration of multimedia computers, educational software, and technical support. Initially building on the foundation of educational computing created in the 1980s, this movement has taken a dramatic turn away from this tradition by moving the teacher back onto stage centre and focusing on integration of ICT into a modern curriculum rather than separate individual instructional programs such as computer-assisted instruction and integrated learning systems. At the core of the educational ICT investment is a concern that graduates of the public school systems acquire those ICT skills that are now required for remunerative employment, citizenship, and family and personal needs. Beyond these core objectives are a less well defined set of objectives that begin to merge ICT with school reform. These vary across OECD countries but link often to instructional change, globalisation, and learner independence.

2.3 The case studies proposed here probe the link between successful implementation of educational innovation and successful installation and use of ICT: does one tend to drive the other? Can one be used as a leverage for the other? Of particular interest is the school as a social organisation—its operational dynamics and the conditions and processes through which it changes. The studies proposed here will identify sites where major innovations have occurred and been accompanied by major investments in ICT, and study specific issues related to ICT and innovation as outlined below.

2.4 We use throughout the remainder of this report the term innovation as a general designation for substantive, positive change in a school system., regardless of whether the change involved instituting a new or novel procedure or a traditional one. In some countries reform is a synonym for innovation but in others it implies a deliberate policy from a central body that may or may not precipitate change or innovation within any specific school. Change might be a reasonable substitute for innovation, as the latter is used here, but change could be negative or positive and of any magnitude.

2.5 The questions that will drive data collection centre on uncovering the history and effectiveness of the innovation, establishing its relationship to ICT, determining what components of the school infrastructure are critical for the innovation and for ICT, and determining the consequences of ICT use. These are summarised below.

a) Effectiveness. Is the innovation effective as perceived by all major participants? Do participants differ in their perceptions of effectiveness? If so, how do they differ? Did the innovation solve a major problem for the site? Did it open new opportunities for schooling? What had to be given up to achieve the innovation? What negative consequences have occurred? Are further innovations planned?

b) Technology as a catalyst. Was technology a catalyst for the innovation? Did it drive the innovation or was its use a result of the innovation?

c) Diffusion process. Who were the early/late adopters of both the innovation and ICT? Resisters? What are their characteristics (education, age, gender, etc.)? What incentives existed for adoption? Which organisational structures or processes were particularly important facilitators of change or barriers to it?

d) Role of leadership. Who directed the innovation? Did the role or manner of leadership change over the adoption period? How important is the role of leadership now? Would lack of support from a new head teacher/principal lead to the demise of the innovation?

e) Importance of staff training. How important was staff competence in using ICT and integrating it into the curriculum for the success of the innovation? How much did teachers need to change for the innovation to succeed?

f) Technology infrastructure. How was the technology infrastructure--equipment/software/networking, support, training--constructed? Was a critical level required before changes could accelerate?

g) Sustainability and scalability. How well is the innovation integrated into the workings of the site? What special resources and efforts are required to sustain it? What happens if the support for the change is removed? How are new teachers prepared for it? How do they react to it? How dependent is the innovation on one or a small group of supporters? Does it require exemption from any controlling legislation or general operating procedures? Does any identifiable group actively oppose the change? What is required to transport this innovation to other schools? Could all of the schools in the country do this?

h) Academic rigour. Is the curriculum work, especially that which uses ICT heavily, rigorous, as exemplified by assignments, student work, grading, and content covered? Are school, national, or regional standards used?

i) Equity. How equitably distributed are the benefits of the innovation? Has either the innovation or the use of ICT led to any changes in the gaps in academic performance among sub-populations defined by gender, citizenship, entry level ability, or socio-economic strata? If so, describe what has occurred and what evidence exists for attributing the change to a specific cause.

2.6 Stated in hypothesis form, this study posits first that technology is a strong catalyst for educational innovation, especially where the World Wide Web is involved. The rival hypothesis is that where true innovation is found, technology served only as an additional resource and not as a catalyst, that the forces that drove the innovation also drove the application of technology to specific educational problems. A second hypothesis is that the diffusion of the innovation (and therefore of ICT) followed the traditional diffusion pattern for innovations, as outlined by Rogers (1995). This implies, among other things, that actual use of ICT will rarely, if ever, occur evenly throughout a site; furthermore it implies particular characteristics of the early adopters, late adopters, and resisters. The rival hypothesis is that technology functions differently from traditional innovations and that therefore different diffusion patterns occur, perhaps based on age or technical competence.

2.7 A third hypothesis is that successful implementation of ICT depends mostly upon the technological infrastructure and student ICT competence rather than upon staff competence in the integration of ICT into instruction. That is, according to this hypothesis, successful innovative uses of ICT such as collaborative learning and use of real time data can result from enthusiastic students and strong technical support. The

rival hypothesis is that teachers mediate such applications when they are successful, and that academic rigor relates positively to teacher competence.

2.8 A fourth hypothesis is that gaps in performance between high and low aptitude students will be enlarged rather than diminished where all students have equal access to ICT. The rival hypothesis is that equal access to ICT will lead to low aptitude students closing the gap with high aptitude students. (Since poverty level correlates so highly with aptitude, these hypotheses could be restated in terms of poverty level.)

2.9 To help in interpreting these hypotheses and the design that follows, we distinguish the school innovation, which is defined in terms of conventional schooling processes and outcomes: improving student achievement, creating a learning environment, involving parents more in their children's academic work, and so on, and the role that ICT plays in realising this innovation. ICT is not defined here as an innovation, even though we assume that most sites studied will be doing innovative work with ICT. When we speak about the innovation, we are referring to a change in fundamental schooling processes or outcomes and not directly to ICT. The only exception would be when the innovation is concerned with the teaching of ICT skills. Just as schools in the past have attempted to improve their teaching of science or language skills, schools now might have similar ambitions for ICT skills.

2.10 This distinction is critical for determining whether a innovation has been successful. If, for example, a school set out to improve its teaching of science, using computers and the Internet to simulate certain laboratory exercises, successful implementation of science simulations by computer would not be an adequate indicator of success of the innovation. Instead we would want objective measures of science performance by the students, interpreted through school or regional standards, or some other criterion for adequate outcomes. We assume, furthermore, that to achieve true improvement of science teaching, more than ICT must be involved. Staff development, for example, most likely is required, along with, in many cases, a revised curriculum and assessment methods.

3. Selection of Sites

3.1 Each participating country is invited to choose sites for case studies primarily from schools across the age-range where attendance is compulsory. Where there is a strong interest in the use of ICT as a catalyst for innovation in other forms of education (e.g., post-secondary vocational schools, pre-school, home schooling), alternative sites could be selected. We suggest that at a minimum, one-half of the sites should be from the compulsory schooling group. For the remainder of this guide, sites will be discussed as if they were schools. Where alternative sites are selected, some changes in methodology may be required. The Secretariat will provide assistance to research teams in adapting these procedures for alternative sites.

3.2 The number of sites selected for study should be between 5 and 10; the exact number is a decision left to each country. However, even if fewer than five sites can be studied, we will welcome the addition of the data submitted to the final project report.

3.3 For these case studies sites will normally be individual schools, although in some cases a group of schools may be studied as a unit if all incorporate the same technology-involved innovation. The criterion for selection of a site is that ICT has been for at least two years an important component of a major improvement of the school as a learning organisation. Of interest are major, non-incremental changes that received national attention (such as an award for improvement of academic performance) or have been cited as models for change (or should be cited). Improvements of interest might be any of the following (or any combination of them):

a) Expansion of the time or space of schooling, such as after-hours programmes, involvement of the home or of community people in the curriculum, or greater engagement with students from different cultures or socio-economic strata.

b) Increased continuity of learning, such as use of distance learning to serve the schooling needs of children of migratory farm workers, or secondary level vocational students who alternate between school and the workplace.

c) Integration of the curriculum, such as the use of the Internet and multimedia computers to help organise and present projects that are graded simultaneously for different content by different teachers.

d) Enhanced staff professionalism, such as through the use of distance learning and on-line forums to facilitate professional networking, mentoring, and coaching, or enhanced intra-staff dialogue and teamwork.

e) Site-wide curriculum or assessment change, such as a switch to depth over breadth at a middle or high school level, or to authentic learning opportunities for the core curriculum, or to multiple indicators for student assessment.

f) Site-wide change in the organisation or processes of teaching and learning, such as plans that stress small group or individual learning routes.

g) Significant reduction in the cost of schooling without reducing quality or range of offerings.

3.4 Curriculum change within one or a few classrooms does not qualify for selection, nor does any other change that does not apply at a site level. Where applicable, at least 60% of the teachers at a site should be regular users of ICT in their classrooms (i.e., at least once each week), or in their instructional planning, or in their professional development. This does not eliminate from selection sites in which a innovation has not progressed to completion in all classrooms. In many cases innovations will not be completed and in a few cases the innovation may have failed but still provides important lessons on the application of ICT. Some innovations may have originated at a classroom level and then spread across a site; others will have been planned from the top. For innovations that originated from the classroom level, what is critical for selection is that the innovation has become accepted at the site level, as evidenced by the allocation of resources, statements of administrators, site-wide staff development, or any similar indicators.

3.5 The National Research Expert from each country should select or recommend to the relevant authorities the selection of a research team to carry out the studies. This team should select sites for case studies, based upon the criteria just given, and transmit the descriptive information on each site to the OECD ICT Programme. The actual selection process should be done in two steps. First, prospective sites should be nominated by school supervisors, researchers, or ministry personnel. These schools should be asked to fill out the questionnaire given in the Appendix A and to submit the requested information. Based on these questionnaires and accompanying information, sites should be rank ordered by desirability according to the selection criteria. For two times the number of sites desired, selecting from the top ranked sites, a phone call should be made to the lead school official, clarifying any issues raised by the submitted information, validating to the degree possible by phone the accuracy and completeness of the information, and ascertaining the willingness of the site to participate in the study. Following this, one-day visits should be made to these sites to validate further the information submitted. From the data obtained, sites should then be selected.

3.6 Protocols for human subjects' protection should be adopted, based upon each country's separate requirements, and a formal letter of agreement obtained from the relevant lead official of each school involved. Where multiple schools at a site are involved, letters should be obtained from all schools.

3.7 The NRE should also take the necessary initiatives to ensure that funding is provided for the research team. As a rough guideline, we are assuming that a single school site will require on-site work of a team of 2-4 researchers and assistants over a 5-day period. Data collection will consist of interviews with students, teachers, technical specialist, administrators, and parents; surveys; observations in classrooms and other locales (e.g., laboratory); collection of work samples and administrative records; and possibly photographs and videotapes.

4. Data Collection

4.1 The methodology to be used is explanatory case studies as defined by Yin (1993, 1994). Such a methodology is preferred for evaluation when (a) the program to be studied is not easily distinguished from its context, and (b) there are more variables of interest than projected data points. Stated differently, an explanatory case study is an appropriate design for an evaluation when the context of a project or program is assumed to contain important explanatory variables, the boundary between program and context is not easily distinguished, and the number of variables of interest potentially exceeds the number of data points obtainable. Explanatory case studies differ dramatically from ethnographic studies in that they require that (a) data collection is theory driven, with specific issues or questions, stated as hypotheses, defined ahead of time, (b) rival hypotheses are also defined ahead of time, and (c) data collection is focused on what is relevant for resolving the key hypotheses stated in (a) and (b) (cf. Fetterman, 1989; Stake, 1995). It is generally the case, also, that case studies are more time-limited than ethnographic studies, but this may not always be true.

4.2 Case studies, and especially explanatory case studies, derive from a logical positivist tradition. In this tradition, hypotheses are constructed, data collected relevant to these hypotheses, and conclusions drawn from the data. Case studies of all types (descriptive, exploratory, and explanatory) require the collection of any type of data that is relevant to the hypotheses stated, which means that both quantitative and qualitative data will often be gathered. Case studies should not be equated with qualitative data exclusively. In addition, a critical characteristic of the case studies proposed here is that through the methods defined below, a database is developed and cleaned, and then analysis is done. Throughout it is assumed that the researchers are objective, that they remain open to proposed and rival hypotheses, and therefore their histories, interests, attitudes, beliefs, and other personal characteristics are not a necessary or desired component of the case data base. For further discussion on the viewpoints adopted here, see especially Chen, 1990; and Madaus, Stufflebeam, and Scriven, 1989.

4.3 Categories of data to collect:

a. Site description

b. Context of the innovation, including the national and local educational system and the nature of the communities from which the students derive

c. ICT leadership, resources, and support

d. ICT use, both by students and by staff

e. Innovation, including its history

f. Staff, student, and other roles in relation to the innovation

g. Place of the innovation in the everyday life of the site

4.4 Primary data collection should be through (a) interviews with administrators, teachers, students, parents, and at least one technology specialist, if one is present at the site; (b) analysis of curricular materials; (c) observation of ICT use; and (d) miscellaneous indicators such as the timing and content of responses received to e-mail messages that you send, analysis of local web sites, and review of site records (e.g., newsletters, correspondence).

4.5 The selection of specific targets for data collection may need to be adjusted according to the type of site under study and its organisation. However, in all cases multiple perspectives should be obtained. For example, at least four teachers should be interviewed, along with at least two administrative staff members, four students, two parents (where relevant), and a technology specialist, if one exists. Among the teachers, half should be selected from those who were close to or a part of the change process and half from those more distant from the process. These numbers are based on an assumption of a single school site with a teaching staff of approximately 30 and a student enrolment of about 450. Adjustments should be made for sites that are significantly larger but not for those that are smaller.

4.6 In examining schooling innovations, one is often confronted with an overload of committed, enthusiastic supporters of the change. These are the people who most likely were closely involved with originating and shepherding the change and who now play special roles within the school, such as advisors, trainers, or the like. Similarly, if you ask teachers for students to interview, the teachers will most likely give you highly verbal students who support what the school is doing. It is important, therefore, to choose interviewees randomly, where appropriate, from stratifications based on acceptance/rejection of the change, early/late adoption, novice/experienced, or other relevant divisions.

4.7 Teachers and school administrators, because of their exposure to public view and public opinion, are often careful to avoid stating opinions or reporting conditions that differ widely from what is mandated, required, or publicly desired. In examining issues that are potentially sensitive, such as the degree of support for a particular innovation, interviewers need to probe beneath the surface to approach the true state of conditions. Some teachers, for example, might state support for a new process, but might also say that they favour supervisors who did not use the process in question, or given a cut in the school budget, would jettison the process immediately.

4.8 For all significant issues, triangulation should be used. That is, wherever possible, data should be collected not only to give multiple perspectives but also to give multiple types of information that could provide convergent evidence on an issue. For example, in attempting to uncover how much actual use teachers make of e-mail, direct questions to teachers should be coupled with observation of the length of time required for teachers to respond to your e-mail messages to them and statements from parents and teachers on whether or not they communicate with teachers by e-mail, and if so, how effective this mode of communication is.

4.9 For all issues of concern, questions are included in one or more of the interview guides (teachers, students, parents, administrators, technology specialist). A few issues, nevertheless, require collection of additional information. For determining the academic rigour of a site, language arts and mathematics at two grade levels should be selected. (Depending upon the grade levels and types of sites selected, other subjects may be more appropriate and can be substituted.) The syllabi, textbooks, examinations, assignments, and student work for these subjects should then be examined and classroom lessons observed. Where available, norm referenced test scores should also be collected. These should not be the main desiderata for academic rigour, however. What is desired is a judgement of academic rigor on a four-point

scale: high, above average, below average, and low, with the evidence then listed to substantiate this decision. Where possible, links should be made to national and international standards.

4.10 Determining how the change affected academic performance will be a challenge in many sites, due to the lack of objective performance data on the sub-populations of interest. A first step is to identify important sub-populations, based upon sex, ethnicity, or any other factor that traditionally has been relevant for equity at the site being studied. Parents and students from these groups should then be included among those to be interviewed. Questions are included in all of the interview forms on this issue; however, test scores, if available, might give further insights into performance differences across groups.

4.11 For examining sustainability, questions have been included for teachers and administrators on what types of resistance to the specific innovation still exist, what resources are required to sustain it, and whether or not these resources were part of the annual budget. In addition, interviews should yield information on what the staff would give up to retain the innovation if budgets were reduced and what types of staff members most likely would not like the change (e.g., older, younger, less experienced, more experienced, traditional, liberal). Further evidence might be obtained by questioning new teachers on how they were introduced to the innovation and to ICT within the site.

4.12 Scalability should be viewed as an extension of sustainability. Teachers and administrators are asked in the questionnaires what would be required to extend the innovation to other schools and which types of schools most likely would adopt the change. Additional information might be collected from the next higher level of administration above the site: how the innovation is perceived at that level, whether any plans exist to extend it to other sites, what resources would be available to other sites that elected to adopt the same procedures, and so on.

4.13 A master log should be kept (in a language appropriate for the research team) of every activity in a case study (e.g., observation, interview, photography session) and of all data collected. Activities should be identified by a unique code number and by type, place, date, and codes for people involved. A separate list should be kept by the research team of the relationship of codes to real names. Once all data collection and reporting is completed, this list should be destroyed unless permission to identify individuals by name has been obtained. All tape recordings, videotapes, notes, surveys, and the like should be labelled according to a scheme that ties to the master log, duplicated, and stored in a safe environment.

5. Analysis and validation

5.1 The first step after data collection is data cleaning and data archiving. A complete database should be constructed, using electronic storage and retrieval schemes wherever possible. In building the database, all interview and observation records should be checked for completeness and coherence and all collected materials (e.g., student work, teacher log books) should be checked for complete and plausible identifications. Where judgements need to be made, such as in rating the level of academic sophistication of a student project, two independent assessments should be done. If wide divergence of opinion is found, a third evaluator should be employed. Ambiguities and gaps in information discovered at this stage might be resolved by reference to an original tape recording or field notes, or by revisiting the interviewee, either by phone, e-mail, or in person. The resulting database should be the foundation for all analyses and conclusions.

5.2 One of the most difficult parts of any case study is the drawing of conclusions, the process of making generalisations from disparate pieces of data. A critical initial step in analysis is to list each main and rival hypothesis and each secondary issue, and to sort through the entire database, looking for support or refutation of each. Every such item should be listed, with a clear reference back to the full record in the

database. In some cases the initial analyses will lead to plans for further interviews and observations to resolve well-defined issues.

5.3 Because of the issue orientation of the studies and the difficulties normally encountered in making generalisations from case data, we strongly recommend that each national research team develop a review process for its conclusions. One approach is to select a small group (2-3 persons) of critical but friendly advisors whose main function is to challenge the decisions of the research team. This group should meet with the research staff several times during the life of the project and review both the research plan and the conclusions drawn. Their main role is to challenge the research team to defend its decisions—or to change them. They should not, however, see their role as a adversarial one, based upon a zero-sum interaction. Instead, they need to be aware of main and rival hypotheses and ensure that evidence for and against each is carefully considered. Everyone succeeds if the study is well done and the conclusions are strongly supported.

6. Reporting

6.1 All case studies should be fully reported in English or French, with the main attention given to the primary hypotheses defined in Section 2 (relationship of ICT to the innovation, diffusion of the innovation and of ICT, role of staff competence in ICT use, and gaps in academic performance) and less attention given to the secondary issues defined above (role of leadership in the success of the innovation, type of infrastructure required to sustain ICT, sustainability and scalability of the innovation). This document should be prepared in HTML for posting to the CERI project web site, or in Word or WordPerfect, but submitted in RTF format. If photographs are done, copies of a representative sample should be sent with each report. In general, photographs should be used for showing configurations of computers and student work groups that are non-standard, or of displays of student work such as models constructed for projects, or for capturing the atmosphere of a school site or classroom.

6.2 Unless notified otherwise, the CERI staff will assume that personal names, names of schools and communities, and photographs submitted in national reports can be reproduced on the web and in official CERI reports, so long as proper attribution to the originator is made. In general, if a country does not wish for specific individuals, schools, or communities to be identified, alternative labels should be substituted in the report submitted to CERI (e.g., School No. 1, Administrator A).

6.3 Reporting the degree of agreement among participants is critical. If a survey or set of interviews found disagreement on some aspect of a case, for example, on the level of leadership exerted by the head teacher/principal, this should be reported. Where possible, convergent evidence should be sought. For example, academic rigor could be gauged by teacher claims, an examination of teacher-generated tests along with their scoring, and student work (plus the grades received).

7. Schedule

7.1 The Secretariat will work with the research teams from 2-3 countries to develop and pilot test case study instruments. Ideally one of these will use a language other than French or English. Following revision of the procedures and instruments, training will be provided for all national research teams to do a single case each.

7.2 The following schedule is based on the expectations within the CERI programme, and the need for this project to report before the end of the present mandate in 2001. We acknowledge that the schedule is necessarily tight, but ask NREs to attempt to work within it. Where difficulties are posed for particular countries, we will try to find ways by which these can be accommodated.

September 1999	Refine methodology; prepare pilot tests
November-December1999	Pilot one case study in each of 2-3 countries
January 1999	Revise instruments and methods
February-March 2000	Translate instruments as necessary; meet with national teams at the second overall Project meeting; national preparations for case studies.
April-June 2000	Conduct fieldwork for case studies
July-September 2000	Data processing and analysis
Early October 2000	Meeting of NRE/case-study researchers prior to national report production
October-November 2000	National report drafts completed
December 2000-March 2001	Synthesis report draft completed
April 2001	Draft synthesis report sent for translation
End May 2001	Draft synthesis report circulated in both languages for a June conference

REFERENCES

Chen, Huey-Tsyh. (1990). Theory-driven evaluations. Newbury Park, CA: Sage.

Fetterman, David. (1989). Ethnography: Step by step. Newbury Park, CA: Sage.

Madaus, George F., Sufflebeam, Daniel, & Scriven, Michael S. (Eds.). (1989). Evaluation models: Viewpoints in educational and human services evaluation. Norwell, MA: Kluwer-Nijhoff.

Rogers, Everett M. (1995). Diffusion of innovations. NY: Free Press.

Stake, Robert E. (1995). The art of case study research. Thousand Oaks, CA: Sage.

Yin, Robert K. (1993). Applications of case study research. Newbury Park, CA: Sage.

Yin, Robert K. (1994). Case study research: Design and methods. Thousand Oaks, CA: Sage.

APPENDIX A

Nomination Form for a School Innovation Site

Name and address of site:

Web site (if one exists):

Telephone/fax:

Name, title, phone, and e-mail address of lead site contact:

Type of site (age levels/grades, public/private, special populations or services):

Type of national and local educational systems (centralized/decentralized, secular/religious, academic/vocational, etc.):

Location of site (urban, inner-urban, suburban, small town, rural) and its general characteristics:

Primary occupations of parents (list the top 3-4):

Number of students plus notes on any imbalances in representation by gender or citizenship:

Transiency rate of students (the ratio of the number of non-full term students to full term students):

Name, title, phone, and e-mail address of lead administrator:

Administrative structure (departments, self-contained classrooms with single head teacher, etc.):

Number and roles of staff:

Percentage of staff who do not complete the full academic year:

Average number of contact hours for teachers whose primary assignment is classroom teaching:

Academic schedule (start/end dates, weekly days/hours):

Type of instructional schedule (fixed periods, self-contained class rooms, block, etc.):

Formal assessment procedures (types of tests, dates given, purposes):

Student performance levels for mathematics and reading (or equivalent) at two representative student grades:

Total site budget:

Source of income:

Other significant resources available (e.g., volunteer tutors, parent-teacher association fund raising):

Description of innovation (400-500 words--please attach).

Role of information and communication technologies (ICT) in innovation (400-500 words—please attach).

Brief description of the main technologies (ICT) used at the site:

Brief description of the ICT support provided to students, teachers, and administrators:

Main indicators of success of innovation:

Main indicators of successful use of ICT:

APPENDIX B

Interview Form-Administrators

1. General information: Name, sex, education, years working in education; years at this site; job responsibilities; number of people you supervise; type of job (full-time, part-time, etc.); work schedule (courses, etc.); do you expect to be at this site next year; do you expect to be at this site in five years; what would you rather be doing;

2. Perspective on innovation: What is it; what are its goals: whom does it impact and how; what is its value; how has it affected your position; how did it get started; who originated the idea; why was it successfully implemented (if it was); who led it through; who didn't want it and why; who embraced it first; last; what incentives were offered for staff co-operation; what problems did it have to overcome to succeed; what is the cost of maintaining it; what would be required to extend it to other schools and what types of schools would most likely adopt it; will it be here three years from now; should it be here three years from now (and if so, why)

3. Perspective on ICT: What role does it play at the site; how does it relate to the innovation; what role did it play in the development of the innovation; what are its most positive aspects; what are its most negative aspects; what would change if all ICT were removed from the site next year; which students benefit the most; which students benefit the least; who is most interested in ICT being used—and why; what do the staff report as the most aggravating aspect of using ICT; what is their most rewarding aspect; how competent are the staff at using ICT; percentage of teachers at each level of usage (daily, weekly, only on special occasions, never) what are a few of the most innovative uses you have observed over the past year of ICT in instruction; how independent are students in using ICT; how is their use monitored; what abuses have occurred in the past year; how are the costs of ICT covered (regular budget—special funds); if all the money spent on ICT were available for other uses, what would you want it spent on; how is ICT affecting the academic program; is ICT available after classes end for a day

4. Personal ICT use: Do you have a computer at home; do you have Internet access from home; do you plan to buy a new computer in the next 6 months; how often did you use your computer last week for school work; how often do you use it normally in a week for school work; what do you do when you can't get an application to work, or your computer freezes up or crashes, or you can't find what you are looking for on the World Wide Web; how often do you check your e-mail at school and at home; when did you last check your e-mail; how much training have you had for ICT use; how have you learned to use ICT; do you have any plans for attending an ICT training session in the next 6 months; how do you rate yourself as an ICT user (terrific, good, so-so, poor, total novice)

5. ICT support: How is ICT supported at this site; is this sufficient to reach your goals for ICT use; how will ICT be supported in the future;

6. Concluding ideas: What is most needed to improve education at the level you work; why did you go into education; would you recommend education as a career for a high school graduate today

APPENDIX C

Interview Form-Teachers

1. General information: Name, sex, education, years working in education; years at this site; job responsibilities; type of job (full-time, part-time, etc.); work schedule (courses, etc.); do you expect to be at this site next year; do you expect to be at this site in five years; what would you rather be doing;

2. Perspective on innovation: What is it; what are its goals; whom does it impact and how; what is its value; how has it affected your position; how did it get started; who originated the idea; why was it successfully implemented (if it was); who led it through; who didn't want it and why; who embraced it first? Last?; what incentives were offered for staff co-operation; what problems did it have to overcome to succeed; what is the cost of maintaining it; how difficult would it be to extend it to other schools and what types of schools would most likely adopt it; will it be here three years from now; should it be here three years from now (and if so, why)

3. Perspective on ICT: What role does it play at the site; How important is it for the site; how does it relate to the innovation; what role did it play in the development of the innovation; what are its most positive aspects; what are its most negative aspects; what would change if all ICT were removed from the site next year; which students benefit the most; which students benefit the least; who is most interested in ICT being used—and why; what would lead you to use ICT more in your work; what is the most aggravating aspect of using ICT; what is the most rewarding aspect; how competent are the students at using ICT; how do students learn to use ICT; what are the students strongest ICT skills; what are the weakest skills; what problems have occurred with student use; how is student use monitored; if all the money spent on ICT were available for other uses, what would you want it spent on; how is ICT affecting the academic program; how has it affected the way you teach

4. Personal ICT use: Do you have a computer at home; do you have Internet access from home; do you plan to buy a new computer in the next 6 months; how often did you use your computer last week for school work; how often do you use it normally in a week for school work; how often do you assign student work that requires computers; what do you assign; what do you do when you can't get an application to work, or your computer freezes up or crashes, or you can't find what you are looking for on the World Wide Web; if your computer crashed during a demonstrating that required it, what would you do; how often do you check your e-mail; when did you last check your e-mail; do you communicate with students and parents by e-mail; if so, how frequently; how much training have you had for ICT use; how have you learned to use ICT; do you have any plans for attending an ICT training session in the next 6 months; how do you rate yourself as an ICT user (terrific, good, so-so, poor, total novice)

5. Concluding ideas: What is most needed to improve education at the level you work; why did you go into education; would you recommend education as a career for a high school graduate today;

APPENDIX D

Interview Form-Students

1. General information: Name, sex, year in school; years at this school; course where interview is done; career interests; most favoured school subjects; least favoured school subjects; extra-curricular interests and activities; languages spoken; amount of time per day (average) spent on homework; amount of time spent per day (average) watching TV; How do you rate yourself as a student? (excellent, good, average, below average, poor);

2. Perspective on school: If you had children of your own would you like them to go to this school? Why or why not?; What traditions does this school have (songs, ceremonies, celebrations, special days, etc.)?; What could the school do to make your days here more enjoyable? Would you prefer to go to a smaller school? A larger school?; How much pressure does the school place on you to get good grades?; How fair is the grading system?; What's the most exciting thing that you have done in your course work in the past year?; How are the main interests of your closest friends [academic, social, athletic, etc.]?

3. Perspectives on innovation: [This will be of limited relevance to student interviews. Include questions only if the innovation is clearly obvious to students and their opinions about it might yield useful information]

4. Perspectives on school ICT use: What uses do you make of computers at school?; Do you get to use computers as much as you want?; If not, why not?; Do you have an e-mail address that you can use at school?; If so, how many messages per day (on average) do you send and receive in a day?; Do you communicate with your teachers by e-mail?; If so, how often?; Do they respond quickly?; Do you collaborate over the Internet with students or others for your school work?; Do you use the World Wide Web? If so, what for? How much time spent per day browsing it?; How do you get help when you have problems with hardware or software?; What could be done to improve the computer use at this school?; Do the teachers who assign a lot of computer or WWW work teach any differently from those who don't?

5. Computer use and attitudes: Administer the Student ICT Use and Student ICT Attitudes Surveys.

APPENDIX E

Interview Form-Parents

1. General information: Name, sex, education, occupation, years with children at this school; children there now (for each: age, sex, and grade level); children who were once at this school (for each: age, sex, number of years at school)

2. Perspective on school: Why is your child attending this school (e.g., required by municipality, chose to pay special tuition); Would you prefer to have your child attend a different school; How does this school compare to the school you attended as a child; What are this school's strengths; Weaknesses; What is it best known for; What involvement do you have with the school (e.g., member of parent organisation, classroom aide, chaperone on a school trip); When did you last visit the school; What for; How strong is the school's academic programs; How strong is the school administration; How strong academically are the teachers; How much does the school care about student happiness; Social development; Emotional development; Learning to be an independent learner; Learning to be a good citizen; What traditions does this school have; How strong are its extra-curricular activities; How does it communicate with parents; How effective are these methods; What's the most exciting thing your child has done at this school; If you could change one aspect of the school, what would you change

3. Perspective on innovation: Are you aware of the school's program/project to <describe title or goals of innovation> [If not, skip to Section 4]; What is your impression of it; whom does it impact and how; what is its value; Is your child directly affected; How did it get started; who originated the idea; should it be here three years from now (and if so, why)

4. Perspective on ICT: What role does ICT play at the school; Is the equipment as good as what you have at home; what are its most positive aspects; what are its most negative aspects; what would change if all ICT were removed from the school next year; which students benefit the most; which students benefit the least; who is most interested in ICT being used—and why; how competent are the staff at using ICT; if all the money spent on ICT were available for other uses, what would you want it spent on; how is ICT affecting the academic program

5. ICT equipment and use in the home: Do you have a computer at home; if so, what type [ask for a brief description]; Do you have Internet access from home; Who uses the home computer and for what; Do you communicate with anyone at your child's school by e-mail; If so, how often; Do they respond quickly; Do you plan to buy a new computer in the next 6 months; What do you or your children do when you can't get an application to work, or your computer freezes up or crashes, or you can't find what you are looking for on the World Wide Web; How much educational software have you purchased in the last six months [define in terms of number of applications/programs/courses]

APPENDIX F

Interview Form-Technology Specialist

1. General information: Name, sex, education, years working in education; years at this site; job responsibilities; number of people you supervise; type of job (full-time, part-time, etc.); work schedule (courses, etc.); do you expect to be at this site next year; do you expect to be at this site in five years; what would you rather be doing;

2. Perspective on innovation: What is it; what are its goals: whom does it impact and how; what is its value; how has it affected your position; what is the cost of maintaining it; what would be required to extend it to other schools; will it be here three years from now; should it be here three years from now (and if so, why)

3. Perspective on ICT: What role does it play at the site; how does it relate to the innovation; what are its most positive aspects; what are its most negative aspects; which students benefit the most; which students benefit the least; who is most interested in ICT being used—and why; what percentage of the faculty are non-users or marginal users; what do the staff report as the most aggravating aspect of using ICT; what is their most rewarding aspect; how competent are the staff at using ICT; percentage of teachers at each level of usage (daily, weekly, only on special occasions, never); what are their most pressing training needs; what are a few of the most innovative uses you have observed over the past year of ICT in instruction; how independent are students in using ICT; how is their use monitored; what abuses have occurred in the past year; how is ICT affecting the academic program; if you had a larger budget, what would you do with it

4.Views on ICT support: How many full-time equivalents at this site are devoted to ICT; do you have a budget for maintenance and replacement; do you have installed here a routine file backup system; how do you get hardware repairs done; which computing journals or newsletters do you receive; which professional organisations do you belong to; what was the last ICT workshop you attended; what will be the next;

4. ICT configuration: Average number of modern (multimedia) computers per class, plus range; number and size (in number of computers) of laboratories; number of classrooms with a large screen or projection system; number of classrooms and other locales with high-speed Internet access; percentage of computers on a local area network; special equipment (e.g., web server in school, CAD/CAM equipment); estimated percentage of students and teachers with computers at home; consistency of work stations (based on platform types, operating systems, versions of word processors, etc.)

45 Personal ICT use: Do you have a computer at home; do you have Internet access from home; do you plan to buy a new computer in the next 6 months; how have you learned to use ICT; do you have any plans for attending an ICT training session in the next 6 months; how do you rate yourself as an ICT user (terrific, good, so-so, poor, total novice)

5. Concluding ideas: What is most needed to improve education at the level you work; why did you go into education; would you recommend education as a career for a high school graduate today