

PART I BACKGROUND AND METHODOLOGY

This section of the report describes the background of the Study as well as its design and instrumentation.

Note that the term ICT (Information and Communication Technology) is used interchangeably with the term IT (Information Technology) in this report. In fact, the term ICT is generally preferred in education circles in most parts of the world as it highlights the importance of the integration of communication technology in our consideration of integrating information technology in education. This orientation is in line with the emphasis on access AND connectivity in the government ITed initiatives.

CHAPTER 1.1 BACKGROUND OF THE STUDY

1.1.1 Introduction

This report is submitted by the Centre for Information Technology in School and Teacher Education (CITE) of The University of Hong Kong to the Education Department of the HKSAR Government in September 2001 for the Preliminary Study on Reviewing the Progress and Evaluating the Information Technology in Education (ITEd) Projects. With reference to both the HKSAR Chief Executive Tung Chee-hwa's maiden policy address, and the Government's subsequent five-year IT in education implementation strategy (November, 1998), it is clear that the major concern is for all schools in Hong Kong. Implementation and promotion of IT in schools, by its nature, directly affect students and teachers, as well as the school administrators. It is inevitable that there will be a great deal of interaction and discussion amongst administrators, teachers, students, parents, members of the Government and the general public, as well as the business and commerce sectors.

1.1.2 Study Objectives

This study is commissioned by the Education Department (ED) to review and evaluate the HKSAR Government initiatives for the implementation of Information Technology in Education (ITEd) as stated in the *Information Technology for Learning in a New Era: Five-year Strategy 1998/99 to 2002/03* document, with the following broad objectives:

1. To review the progress of the ITEd initiatives and to recommend necessary adjustments to the implementation of the projects;
2. To review the application of IT in education in the light of the extent to which schools have adopted and implemented pedagogical practices that use technology; and
3. To review the extent to which the vision of promoting ITEd has been met as reflected by teachers' and students' perceptions/adoption of IT in school education.

The specific objectives of the Study as stated in the service specification are as follows:

1. To formulate a conceptual framework to study the relationships among the ITEd initiatives/projects in achieving the vision stated in the IT strategy, in light of the key domains, namely, access and connectivity, teacher enablement, curriculum and resource support as well as community-wide culture;
2. To review the current status of the school year 2000 to 2001 of IT in school education as compared to the situation in November 1998;
3. To examine representative stratified samples of schools and identify some operational and cultural descriptors for signaling the impact of IT on schools, teachers and

students;

4. To determine the extent to which the vision of promoting ITed has been achieved as perceived by teachers and students regarding whether IT can help teaching and learning;
5. To recommend necessary adjustments to the implementation of the ITed initiatives;
6. To recommend options on the practicable approach to evaluating the overall impact of ITed initiatives; and
7. To propose necessary preparations to evaluate the overall impact of ITed initiatives/projects by 2003 based on the findings of this preliminary study.

1.1.3 Study Approach

In implementing the ITed initiatives as stated in the HKSAR government's Five-year strategy, "Information Technology for Learning in a New Era", it is apparent that a lot of measures have been taken at the systems level to provide support to schools. However, different schools are responding and taking advantage of these initiatives in different ways, depending on existing school factors, producing different results. Thus it is important that the current evaluation study to review strategies and implementation at school and system levels as well as their interactions in order to provide more comprehensive recommendations on the necessary adjustments to the implementation of the ITed projects. To achieve this, a comprehensive framework (Figure 1.1.1) for conceptualizing the factors influencing the implementation of IT in education at the system (macro), school (meso) and individual (micro) levels is used to provide a basis for the research design and analysis.

The theoretical framework for this Study takes the view that the main objective for the ITed implementation is to promote the development of desired learning outcomes in students. There are three levels of factors contributing to the quality of the learning outcomes: the education system level, the school (and classroom) level as well as individual (including family) level factors. At the education system level are the policies that directly guide provisions and developments in IT infrastructure, teacher professional development, curriculum frameworks/specifications and resource support, assessment policies, as well as policies that would influence the roles of and support given by various

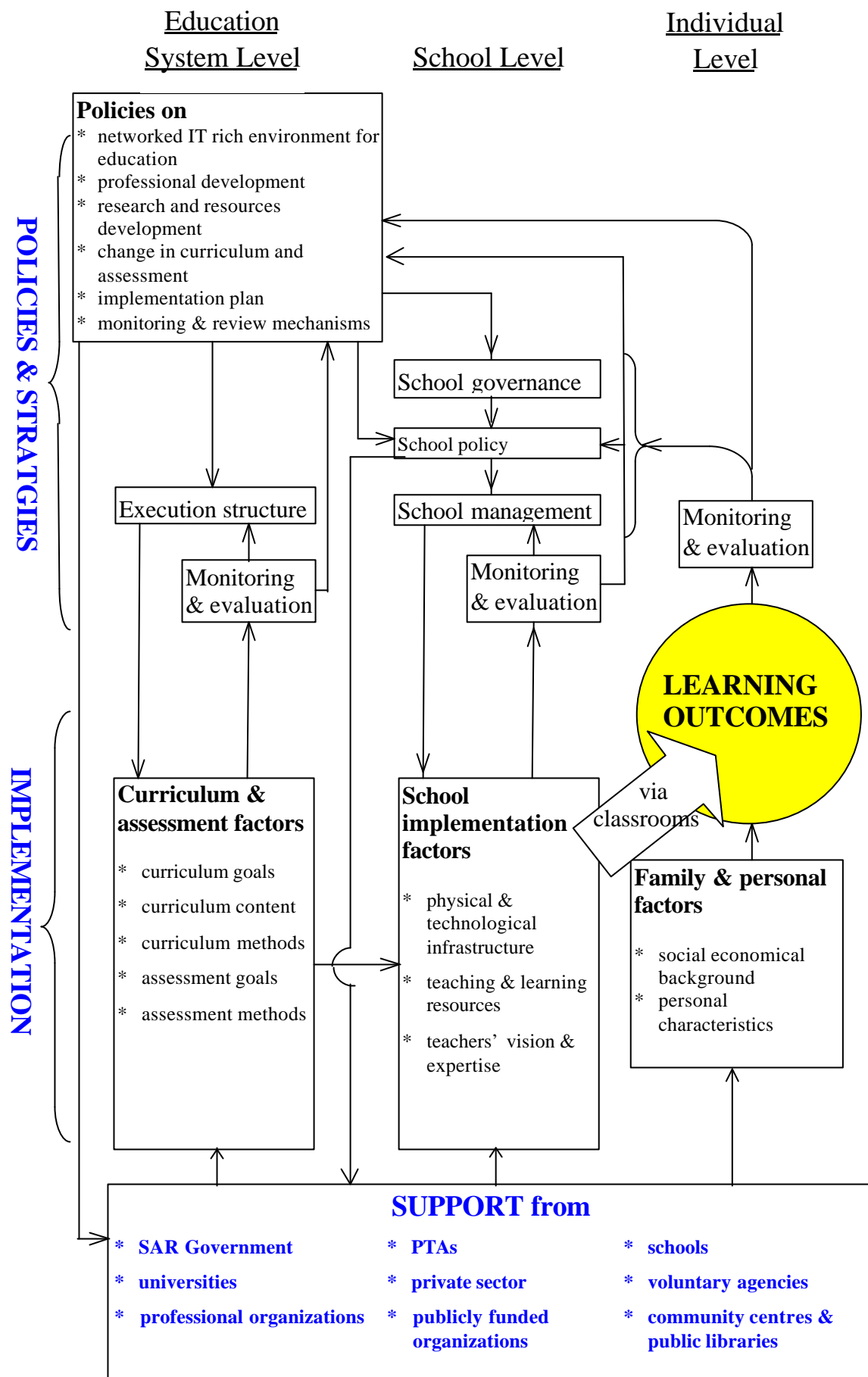


Figure 1.1.1 A systems model of change for IT implementation in Education

stakeholders and community partners. School level implementation is influenced by leadership factors at both the education system and school levels as well as the physical and human resources available in specific schools. Besides education system and school level factors, a student's learning outcomes are also dependent on his/her own family background and personal characteristics. In designing the study, care is taken to assess the policy and impact in relation to the key factors affecting the implementation of ITed at these three levels.

While system and school level factors provide important contexts for the learning environment, the actual learning experiences that students go through are generally designed and conducted by teachers in classroom settings (classrooms here refer to structured teaching and learning sessions conducted as part of the formal school curriculum and should include activities that take place in venues outside of the physical classroom). The activities and interactions that go on in the classrooms form the implemented curriculum. Figure 1.1.2 provides a detailed framework for conceptualizing the role of IT in classrooms from a curriculum perspective and how student learning is achieved in the study via classroom implementations of the school intended curriculum. The school intended curriculum is in turn affected by the broad curriculum framework at the systems level. By introducing IT into the classroom, we are introducing a third factor to the existing players inside a classroom, the teacher and the students, thereby potentially changing their roles and interactions.

In evaluating the impact of IT on school education, an examination of the impacts that IT has made on possible changes in roles and interactions of the teacher and the students and the contribution of technology to such changes is then crucial to evaluating the *“full integration of IT in the new curriculum after the holistic review of CDC”*. Consistent with this framework, an evaluation of *teachers' changing competence, beliefs and attitude towards IT use* in classrooms should be conducted to shed light on how these factors impinge on the nature and extent of changes that has emerged in terms of classroom roles and interactions. In order to achieve this, it is desirable and important that more in-depth qualitative studies be conducted to provide more vivid descriptions of the actual roles and functions of ICT inside classrooms, how it interacts with teachers and students, as well as how the school and system level factors contribute to/constrain the classroom implementation.

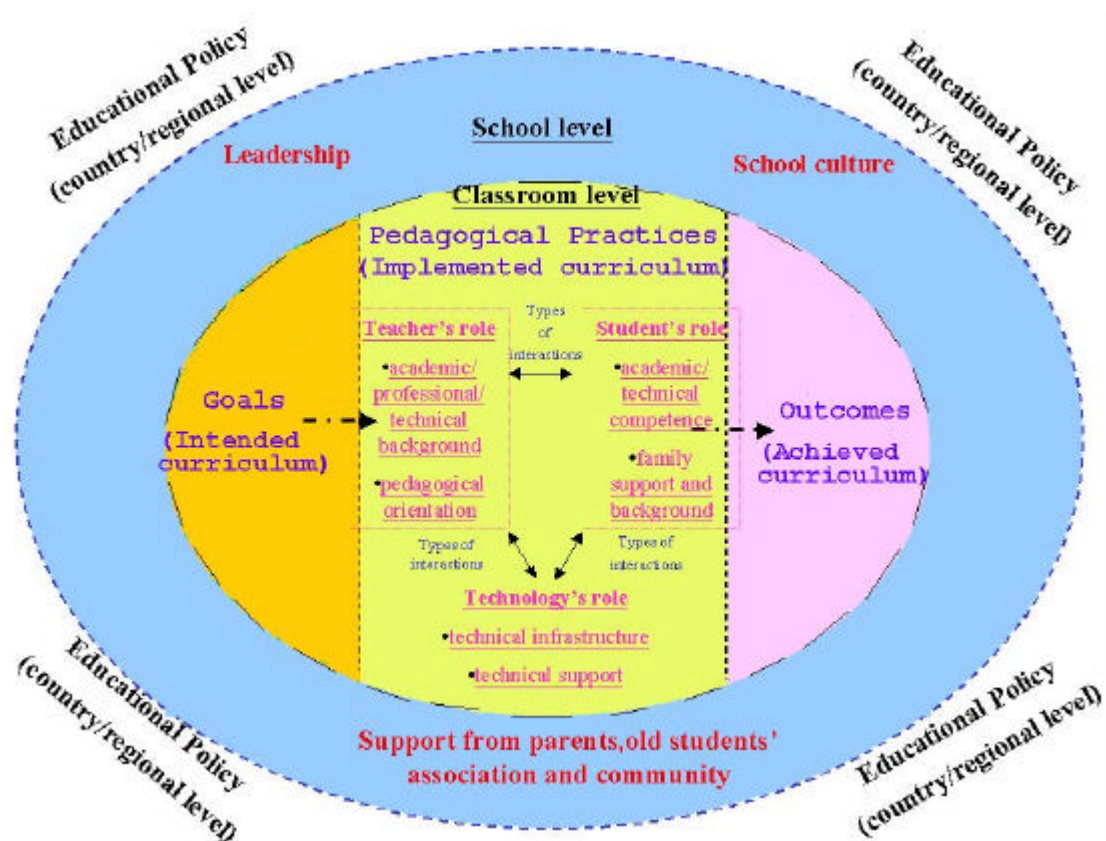


Figure 1.1.2 Diagrammatic representation of the framework for conceptualizing and analyzing IT-supported pedagogical practices in school settings.

1.1.4 Research Questions

Based on the above theoretical frameworks, a variety of research methods and instruments has been developed to study the ITed strategies and implementation at the different level described. The research findings will be analyzed to address the following research questions as agreed by the ED:

1. How have schools taken advantage of the various ITed initiatives provided by the government at the system level? What variability can one observe there? [This is essentially item (b) under the scope of study in the service specification]
2. What impact has the implementation of ITed made on teaching and learning in schools, especially in terms of formal classroom learning (as defined in the previous section) [Items (c) & (d) of the scope of study in the service specification]?
3. How have teachers' and students' competence and attitudes changed since
4. Is there any relationship between the profiles of teacher competence and attitudes and the different kinds of impacts observed in terms of classroom implementations?
5. What kinds of visions and implementation strategies have emerged in different schools in Hong Kong? How do these different visions and strategies relate to different

implementation outcomes at the classroom level?

6. What kinds of policy adjustments should be made to enhance the implementation of ITed in Hong Kong schools to achieve the policy visions [Item (e) of the scope of study in the service specification]?

In addition, this report will provide, on the basis of the study results, a recommendation for the approach and preparations for the evaluation of the overall impact of ITed initiatives by 2003 [item (f) of the scope of study in the service specification]. In particular, the recommendation will make initial recommendations on the evaluation of student learning outcomes – an important aspect of evaluation that is not included in the current study because of the complexity and difficulties involved.

1.1.5 Research Design

In order to address the six specific research questions as listed above, 4 sets of questionnaires to be administered to students, teachers, IT coordinators and principals of the schools are developed as the main instrument for collecting the quantitative data for the survey component of the Preliminary Study on Reviewing the Progress and Evaluating the Information Technology in Education (ITEd) Projects (REITEd Study). After the 4 sets of questionnaires had undergone numerous drafts across all members of the team and have been piloted in some schools, they were finalized and sent out to the schools in April 2001. Appendix 1.1.1 presents the final version of the questionnaire sets. The targeted survey population was mainly divided into two that included the primary and secondary populations. The population definition used and the sampling design for the REITEd survey are based on the SITES M1¹ (Law et al., 1999) so as to provide opportunities for longitudinal comparisons. Details of the survey design and sampling method are presented in Chapter 1.2.

Besides, another main source of data that emerges from various forms of qualitative data are collected in this study. There are three main categories of qualitative data collected in this study: the documents related to the IT in Education initiatives provided by the Education Department (to which we have also included the information about IT related QEF funded projects found on the QEF website), the applications made by schools in response to the various IT in education initiatives of the government (also provided by the Education Department) as well as case studies of how schools make use of ICT in the teaching and learning activities of the school. These sources of data provide a rich database

¹ The populations of primary and secondary schools in the Second International Information Technology in Education Study Module 1 included special schools and private sector schools.

for us to examine IT in education implementation in Hong Kong at the system, school and classroom levels. The findings from the qualitative data will also be triangulated with the findings from the survey study.