Enhancing Teaching and Learning in Schools Through Facilitation of Online Learning: Issues of Implementation in Hong Kong Schools

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Abstract

This qualitative study reports on an IT integration project commissioned by the Education Department of the Hong Kong Special Administrative Region. In conjunction with two primary schools, an online integrated learning environment was designed and developed for use by all Primary Three (P3) teachers in one school and all Primary Four (P4) teachers in another. In both schools teachers teaching Chinese, English and Mathematics were involved. The idea is to develop these two schools to serve as models for teachers who are currently preparing to meet the information technology competency levels set by the Education Department. The project aims to assist teachers to develop alternative teaching and learning strategies involving use of information technology to cope with individual learning differences in response to the current education reform movement. This case-study reports on changes occurring in both teachers and students. The changes are described and the factors supporting this change are discussed. Finally, we discuss the progress made in the last eighteen months toward establishing an environment that aims to stimulate and engage a major cultural shift with Hong Kong pupils, parents and their teachers. The resultant best practices will hopefully be accompanied by a change in beliefs, both for the pupils and teachers involved and for the many teachers in the future who may benefit from the use of the integrated learning environment.

Introduction

The initiatives of the Education Department of the Hong Kong Special Administrative Region (HKSAR) and the excellent information technology (IT) infrastructure in schools have established an increased level of use of computers in the classroom. This in turn has compelled teachers to seriously consider changing their teaching strategies and practices. Although with some reticence, teachers are beginning to admit that they are no longer the information giver and to grapple with the issues related to coping with individual differences in their classrooms. As Tiene & Ingram (2001) rightly put it:

"Many of us expect that using technology wisely and effectively in education can lead, over time to a real revolution in how teachers teach and students learn. It will not happen quickly or easily, but it could happen. It will not happen if we simply use technology to continue our old ways of teaching. We all need to learn new ways to teach that take advantage of what the various technologies do best. Learning how to use new instructional strategies is likely to be a more challenging task than learning the technology itself." (Tiene & Ingram, 2001, p. 257)
In planning for this project research informs us that using new media to deliver the same content in the same way will not result in any better or different learning (Becker, 1999; Bennett, et al., 2000). Instead we need to look at what the new media do especially well and take full advantage of those characteristics. 

**Education reform and the impact of IT on teachers in Hong Kong schools**

With the push to introduce IT in schools the government expects all pupils to have the necessary skills. As recommended by the "Information Technology Learning Targets" (Curriculum Development Council, [CDC] 2000) the use of IT in teaching and learning must be accompanied by corresponding changes in the school curriculum. How this will affect teachers has been explicitly stated in the "Information Technology for Learning in a New Era - Five-Year Strategy 1998/99 to 2002/03" (Education Manpower Bureau, 1998, para. 5.3) that the existing curriculum will be revised to enhance the level of awareness and use of IT.

The reform agenda calls for fundamental changes in all curriculum areas including the integration of IT. To teachers, this introduction only adds another level of compilation to what is already a daunting task when they already have to cope with the many demands made of them in the past few years. Currently the cultural context for the use of IT to cater for individual differences (ID) in Hong Kong, although under reform, is not conducive. What is seriously needed is a significant whole school cultural change. The big question remains "How does a school bring all or almost all of its teachers on board, particularly when many of those teachers have little experience with the use of IT tools?"

**Project Description**

The project entitled “IT for ID” was announced by the Education Department in March 2000. Briefing sessions were conducted and school principals were requested to put in an expression of interest. Preferably the schools should not already be engaged in multiple projects and need not be fitted with sophisticated IT equipment. Two primary schools were eventually selected for participation in the three-year (2000-01 to 2002-03) project. During the summer school break (July-August 2000), before the official commencement of the project, work was carried out to ensure that the two schools had functional intranets and reasonable computing equipment. The project team worked closely with the IT Co-ordinator in each school to establish a stable network infrastructure.

A briefing session was held for both schools to introduce the main aims of the project. The project team would work closely with the teachers to:

- facilitate exploration and implementation of useful and effective learning experiences for their students — paying particular attention to children of lower academic abilities — through integration of the use of IT in the areas of Chinese, English and Mathematics;
- facilitate a well-developed understanding by teachers of the teaching and learning objectives that particular models of IT use can facilitate in coping with individual differences;
- assist teachers to manage the integration of IT resources — use of the integrated learning environment (ILE) and development of individual study plans;
- encourage teachers to become reflective practitioners who will be able to continually evaluate and reflect on the successes of the strategies used in the classroom (three teachers in each school have been chosen for in-depth case study);
- provide seminars to inform teachers of the breadth of opportunity that IT offers in assisting and enhancing the intellectual development of the learner as a whole; and,
- establish an integrated learning environment (ILE) (Figure 1).

**Context for the use of IT to cater for individual learning differences**
In addition to the above objectives, we had to arrive at a common understanding with the teachers on the following key factors that will influence the project.

- As schools are currently organized, it is not always possible for each individual student to receive the appropriate educational experiences without more targeted efforts to deal with individual differences (ID).
- School-based curriculum need to be adapted and developed to meet specific needs of each child to reach their optimal potential, and the demand for tests and examinations, as well as the meeting of teaching schedules should not inhibit the student's progress.
- The excessive demands on teachers by schools must be alleviated.
- Teachers need to have a comprehensive understanding of student individual differences in order to have more success in educating students better and to assist them to reach their optimal learning level.

**Methodology**
Using qualitative techniques we describe some of the initial changes resulting from the teachers' participation in the project.

**Subjects:**
School A has 30 classes (P1-P6) with 963 students and 43 teachers with a high percentage below thirty years of age.
Twelve P3 teachers were selected who taught Chinese, English and Mathematics (six from each subject)
Three teachers - one from each discipline was appointed by the Principal as case studies
Other teachers were to be involved progressively
School B has 24 classes (P1-P6) with 800 students and 33 teachers with about one-third of teachers below thirty years of age.
Twelve P4 teachers who taught Chinese, English and Mathematics (four from each subject)
Three teachers - one from each discipline was appointed by the Principal as case studies
School A had a network, two computer laboratories and a number of PCs in the staff room for staff use. School B had no computer network, one laboratory that was not networked and limited number of PCs for staff use. Teachers in both schools were also not highly IT literate. More teachers were at the basic IT competency level in School A than in School B.
Both school principals were also keen to promote IT. The idea of involving a fairly large group of teachers within each school was to achieve 'whole school culture change'.

**Data Collection**
The data for the study came from multiple sources. Through seminars and workshops teacher responses on the following were collected:

- Perceptions of individual difference?
- Curriculum adaptation as perceived in the school?
- Views on use of IT to cater for individual differences
- Current constraints
- Teacher coping strategies

A survey was conducted of teacher IT competence levels and teacher self-perceptions of use of IT applications in the classroom. The two principals were also asked to provide comments on the same issues. Selected readings were distributed and discussed. Video vignettes were taken of classes where the ILE was used and lesson plans of case study teachers were collected for analysis.

**Interim Results**
The project is currently in the second year. Data collection will be continued throughout the study. Teacher reticence to the use of IT may eventually dissipate if the project team is able to provide the advice and support to teachers on instructional design as and when needed. The data from selected aspects of the project are reported in this section.

**Teacher Change**
Teachers have come to realize that they can with the support of team members maximize the positive effects of their use of IT in the classroom. They have used learning objectives to drive the use of IT in the classroom and made effective use of individual study plans on the ILE. They are beginning to establish in-depth student profiles by analyzing data collected in the Personal profiling System (PPS) and experimenting with new ways to use IT in their own classrooms. Teachers are now more confident to experiment with different ways of catering for independent learning (Figures 2a-2e demonstrate some features of the ILE).

**Whole School Change**
To date, the school principals have been very supportive and have adjusted the timetable to allow for project activities to take place. Teacher release from some teaching has been achieved. There has been a generous provision of relevant resources to meet the demands of the expanded educational goals of this project. On the whole, within the past eighteen months of the project the traditional structures, which appeared to inhibit the innovation in its early stages, were both challenged and changed.

**Student Change**
Through classroom observations and teacher discussions and reflections it can be noted that students have changed their way of working in the classroom. Although there was a general unease about the level of noise and freedom of movement, teachers commented that the students liked working with the ILE and completed tasks that were essentially different from what they were used to. Students could now engage in group work for the first time and collaborated with fellow students more confidently. Individual students could be challenged and extended through provisions of extension and individualized activities on the ILE which students could access from home at any time. A student survey reported that 94% of students liked learning this way, while 88% commented that their skills and ability could improve in the future. More than three quarters of the students liked very much the interactive software that has been created specifically for topics taught using the ILE.

**Parents' Participation**
By logging into the ILE they are able to see their own child's progress and communicate directly with the teachers concerned. Feedback to date has been positive and they were appreciative of the IT training and ILE familiarization sessions that the team had arranged for them in the evenings and on weekends. It is evident at this stage that a stronger parent-teacher-student link has been accomplished that can be furthered nurtured.

**Discussion and Implications**
Perhaps it is too early to predict with confidence how successful this project will be in achieving the complex aims and objectives. However, our team believes that the creation of the ILE and the impact this project has had on whole school culture is an important first step towards fostering the development of a collaborative ethos among teachers to maximize the potential that IT has to offer to cater for individual learning differences. Since Hong Kong has a short history of integrating IT in the classroom, it should not be surprising that many IT tools and resources that have been used so far to support the varied activities of the primary school classroom involve practices that are deeply embedded in traditions of teaching and learning. It was therefore vital for the project to continually monitor how users will perceive the ILE as a tool. As the user becomes more experienced with the use of this tool, then perception will shift away from the tools as objects restricting actions, the user
will become less conscious of the tool and will be able to focus on the end goal - introduce new ways of teaching, learning, and assessment. Unless this is recognized and accommodated for, the intervention is not likely to be successful. The constraints of the classroom and the curriculum are still very evident, and the demands made on teachers extremely high. Many issues are being dealt with at present but many conflicts between the old and the new are only starting to surface and may not be resolved so quickly. Teachers may have to rationalize the content of their syllabus and may have to admit that some of the old content will just have to go. Teachers would also need to acknowledge that new ideas and methods have proven their worth.

In the end, if this project can encourage teachers to examine the learning process, which allows students to assume personal responsibility and which provides for choice and flexibility in how students learn, then it would be pointless to even try to put a dollar amount to the achievements of this change. It is also highly likely that in spite of this, not all staff will end up embracing the usage of the ILE to the same degree, and not all staff will fully understand why the change was so desirable or important to the Hong Kong education scene.

As the project progresses, teacher orientation may continue to reflect either the formalistic, expert-centred perspective of the traditional paradigm for education, or alternatively, teachers may begin to experiment with learner-centred constructivist paradigm. We are optimistic that some teachers with minimal support will undertake constructivist curriculum innovations that incorporate use of IT, while others may never have enough support to begin such journeys because for them to teach in such a way would violate their essential needs and beliefs.

With full dedication and enthusiasm from teachers the ILE should become a catalyst for whatever changes they wish to make. It should alter the constraints of conventional classrooms and begin to allow teachers to actively cater for individual learning differences.

Integrated Learning Environment — diagram

Figure 1: Integrated Learning Environment

Features of the Integrated Learning Environment

- LOGIN SCREEN

Figure 2: Individual Study Plan
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