

# SARS epidemic: Teachers' experiences using ICTs

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In 2003, the Severe Acute Respiratory Syndrome or SARS spread rapidly via international air travel from China to many cities across the world, resulting in over 8000 cases of infections and 774 deaths. In Hong Kong, as the virus invaded the community so did fear. The government put in place measures to help the public guard against the virus, one of which was to close all schools and universities. 1302 schools were closed. 1,000,000 children stayed at home and 50,600 teachers were faced with the challenge of using digital technology to provide an education that would reach beyond school walls into the homes and computers of Hong Kong students. Teachers had to re-think their teaching strategies and provide their students with new and different opportunities to work through curriculum requirements. SARS provided a catalyst for intense use of ICT in ways which had not been anticipated or prepared for. The plunge into ICT was a voyage of exciting discovery for some and frustration for others. Either way it had an impact on subsequent perceptions of the potential and shortcomings of ICT in education in Hong Kong. This paper focuses on teachers' perspectives of the role played by digital technology to meet the challenges faced by Hong Kong educators.

**Keywords:** ICTs, SARS, teacher education

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## Introduction

In February 2003, a sick physician from mainland China visited Hong Kong. He brought with him a deadly virus that was to spread fear throughout the territory and the rest of the world. By May 2003, the Severe Acute Respiratory Syndrome or SARS had infected 1755 people in Hong Kong and claimed 304 lives. SARS is the twenty-first century's first severe new disease. It spread rapidly via international air travel from China to many cities across the world, resulting in over 8000 cases of infections and 774 deaths.

Many businesses suffered, especially hotel, tourism and travel. Phone companies, however, and Internet providers in particular, boasted huge increases in profits as residents were forced to find alternative ways of accessing information and communicating with each other. Priorities were reassessed; communities had to find ways of coping with the panic while contributing to the fight against the disease. In one way or another SARS affected almost every aspect of personal and community life in Hong Kong.

Schools were closed suddenly. Teachers had to re-think their teaching strategies and provide their students with new and different opportunities to work through curriculum requirements. Some teachers simply recorded teaching monologues and uploaded them online. Other more innovative teachers set WebQuest activities, but most were unprepared.

SARS created major tensions in Hong Kong, especially during the early weeks when the numbers of infected cases rose sharply and lifestyles were disrupted. Mistrust of the Hong Kong and China governments over the handling of SARS grew and residents who could, fled the country for several months to live in a safer environment. The unease caused by the government's mishandling of events was a key factor in Hong Kong's largest ever demonstration which took place in July 2003.

This paper examines the education sector and teachers' response in particular to the SARS crisis.

## Education during SARS, expectations and realities

Great expectations surrounded new and emergent information and communication technologies (ICTs) which were seen as the education sector's salvation and solace in a time of crisis and change following the hand-over of Hong Kong back to China. It was assumed that the use of new ICTs would result in

improvements to teaching and learning in general and it seemed to offer a channel for education in the face of the challenges presented by SARS.

In 1998 the then new Hong Kong government made clear its perception of ICT as an agent of change in education seeing technology “as a powerful educational tool that can play a catalyst role in the transformation of school education” (EMB 1998, p.1). In support of this view the government made available “HK\$B3.05 (about US\$M391)” in the same year, to equip schools with hardware and software and to provide ICT infrastructure and technical support (Plomp et al. 2003, p.25). By 2003 it was reported that all schools in Hong Kong were well equipped, all teachers had received basic training in the use of ICT and most students had full or partial access to good Internet facilities either from home or from local community services with Internet facilities (EMB, 2003). This drive to integrate ICTs into education, in part to stimulate educational reform is not new (Cuban, 2001) and is duplicated by many government education policies around the world (Plomp et al., 2003). It does indicate however, a view that technology *per se* is a good force for education. This view was repeated in the mass media in Hong Kong at the time of SARS.

During the SARS closedown, the main local English newspaper, South China Morning Post reported that “schools may be closed but learning can continue, with lessons posted on school websites” (12 April, 2003). Many schools throughout Hong Kong took up the challenge to make the most of ICTs to ensure students continued their formal education. However, there had been no time to prepare for school closure and the government department responsible for education, the Education and Manpower Bureau (EMB) was unable to develop guidelines for schools on best practice in these new circumstances. Schools were encouraged therefore to develop their own strategies and individual teachers were offered a free reign to decide what they wanted to do or what they could do in order to facilitate their students’ learning.

Much was left up to individual schools and teachers. The differences in the provision of services offered by schools was considerable. Schools that already had IT implementation strategies in place were better prepared to meet the challenges presented by SARS. They were able to coordinate whole school solutions. Providing students with set tasks that required students to work independently and via online collaborative group work. However many schools, despite the innovations set in motion by government funding, were ill prepared to use IT in ways that would reach their dispersed students. In some schools individual teachers developed their own ways of communicating with their students. The majority of teachers however struggled to continue their students’ education through a mode of delivery with which they had little or no experience.

This paper focuses on how teachers coped with the schools’ closedown and their use of ICTs to support student learning.

### **The context of this study**

Hong Kong has a population of 6.8 million. One million students study in 1302 schools: 486 are secondary and 816 are primary schools (Yamato, 2003). These students are taught by over 50,600 teachers (EMB, 2004). The majority of schools use Chinese as the Medium of Instruction (CMI), but there are also a small number of English medium (EMI) schools. English however, is still taught in all schools and most teachers speak some English.

Although things are changing slowly, education in Hong Kong is still dominated by a rigorous examination system which determines school placements at various times in the lives of the students. The school closure was a serious disruption to covering the required curriculum and there was an imperative to find a way for students to continue their studies.

The school teachers involved in this study were undertaking the Master of Science in Information Technology in Education (MSc[ITE]) in the Faculty of Education at the University of Hong Kong. The course is designed to meet the needs of those in the educational community, who are involved in IT implementation and use. The course aims to enable participants to become critically informed about IT issues and practices in education and to prepare teachers and educators to design, develop, evaluate, implement, and manage the use of IT at various educational levels and settings. The course offers an opportunity for those who seek to develop leadership capacities in the use of IT in education to pursue

advanced study in the field of IT in education and provides a comprehensive introduction to cultural, administrative and technological implications of new technologies *in* and *for* education. It is a part-time course which offers a flexible modular structure enabling participants to progress according to their own pace, while still teaching in their schools.

An assumption made in this study was that those who participate in a Masters program in IT in education are likely to have a positive attitude towards the use of IT in education. It was not assumed, however, that students on the course would necessarily see the need to do things differently in teaching and learning in order to meet the government's challenge to use IT as a catalyst for the educational reform agenda.

### The participants

The school teachers involved in this study were predominantly Cantonese speakers attending the MSc[ITE] program. Their reasons for undertaking this course were varied, but mainly they were concerned with finding out how IT could be used to enhance teaching and learning and how to manage IT for sustainable development within their schools. Sixty teachers on the course were asked to describe what happened in their schools over the period of school closures and what use, if any, ICT played in the continuation of student learning during this time. They were asked to describe their experiences and to share stories of success and failure in the use of IT in their schools. Teachers were then asked to upload their responses to an online course room and use these comments as a basis for discussion about the similarities and differences of strategies used by their respective schools or by individuals within their schools. Eight teachers were then selected from the original sixty for interviews on the basis of age, gender, years of teaching experience and school responsibilities to gain a spectrum of experiences and positions in schools. Information about the interviewees is given in Table 1 below.

**Table 1: Information about interviewees**

Teachers interviewed	8
Gender	4 male, 4 female
Age 25 – 35	5
35 - 45	3
Teaching experience	2 less than 5 years 6 more than 5 years
Teacher roles	5 ordinary teachers 2 teachers with special IT coordination responsibilities 1 subject panel chair

Interviews were conducted to gain insights into the participants' experiences of ICT use during the school closure and to discuss possible longer term impacts SARS has had on their schools. The interviews were conducted in English.

The participating teachers interviewed held widely differing attitudes towards new technologies and their role and impact. Their views ranged from enthusiastic 'technophiles' through cynics to 'technophobes' and many stances in between (Bruce, 1997; Fox & Herrmann, 2000). In general, there was some unease and a sense of insecurity caused by a lack of familiarity with technologies and their purpose in education and the impact of change itself, creating doubts and suspicions about new technologies.

### Findings: Teacher's perspectives

The sudden closure of the schools during SARS, left most teachers unprepared. "The last day of school before the closedown was chaotic" said one teacher. "Due to timetable commitments on the final day before closedown, form teachers in my school did not see all their students. ... also some parents had already kept their kids at home, fearing SARS infection at school ... ." Another teacher said: "... we were given no guidelines or help on what to do or how to carry on teaching. The school announced no policy ... in fact we didn't even get the full class list of emails till several days later." Few schools offered clear directives to teachers and few teachers felt they had the necessary skills or experience to successfully switch from everyday face-to-face teaching to alternative environments (distance education strategies, the Internet, phone, ordinary post, etc.). Several teachers noted that they felt 'shocked' and 'stunned' by the

sudden change of events. “We just weren’t prepared for this emergency ... and we had not had appropriate training to use the Internet ...” Though all teachers in Hong Kong had attended training courses on using ICTs, most felt unable to use this digital environment as the dominant medium to work with. “We’d had some experience of using ICTs in class, but this situation was totally new and threw us into a totally different way of thinking about teaching and learning”. Another teacher added:

the main point is, real teaching happens in the classroom, not via the Internet ... how can you teach children if you can’t see them, know who’s there, see whether they are wide awake or asleep ... Students sent me emails, but not using their school email addresses, nor including their names on the message. Others used their parents email addresses and my messages were read ... and maybe deleted by the parents even before the students read them. In the end I had no idea who I was corresponding with. ... I sent emails to my students with attachments of tasks to complete ... but quite a few messages bounced back ... so I know I was not getting through to quite a few students. So what we could do was very limited. The incentive to work hard to get this form of teaching to work just wasn’t there ... if we did anything at all with technology, the principal thought we were marvelous. ... It’s just too difficult interacting with ether! ... Teaching’s a two way thing. Without student’s immediate responses, it’s like talking to yourself!... and eventually when students did respond to my calls, it was always the same small group. The majority were silent lurkers or absent!

Not all teachers interviewed were negative about the use of ICTs during this period. The following section explores staff attitudes, views and beliefs about the pedagogical opportunities made possible by the new environments, themselves made possible by the new technologies.

Prior to SARS many teachers were very positive about the potential of ICTs to help them meet the increasingly diverse demands of the curriculum and the needs of their students as well as facilitating the development of more ‘flexible and independent learning’ opportunities. Some teachers though pointed to the difficulties their students faced in working more independently, especially younger students, suggesting that the use of the new technologies added to the level of difficulty and a feeling of isolation for many students. During the school closedown this was reinforced by comments from teachers that their students had reported feelings of isolation at home. Students found it very hard to get into the spirit of completing online learning activities in a non-classroom environment.

Some teachers indicated that students’ IT skills were more sophisticated than those of the teacher. One student, for example established his own website and invited class mates to send in comments on how the school was coping with the closedown. (This example is examined in a forthcoming paper on student stories.) Four teachers commented that the prolonged use of ICTs during the school closedown highlighted some effects on students’ work. They reported a reduction in the length of sentences and an increase in the use, as one teacher stated, “language shortcuts and Internet slang”. One teacher noted that time using the new technologies was not always well spent and that more formalised IT lessons in the future, should be incorporated into the curriculum. The SARS crisis highlighted the need for students to learn how to learn through new technologies and that educators need to build in strategies for using new technologies more effectively as part of their everyday courses. Two teachers noted an apparent increase in some of their students’ ability to concentrate on a topic while others commented that a number of their students did not like to work online, and had requested alternative resources such as the use of the phone and sending printed materials through the mail to supplement their learning.

Teachers who were regular users of ICT with their students, even before the schools closedown, noted a general change in the nature of student-teacher interactions, as one teacher explained:

My quieter students, particularly the shy ones, in the past, tended to ask other students questions or request explanations ... Now I’m finding I’m getting email messages from these students ... I’ve collected a bank of FAQs [Frequently Asked Questions] ... these are now online, on the class Web-site. All I need to do is direct students to the site ... it’s much easier.

However, few teachers responded so favourably or resolved the issue of frequent student emails and the resultant increase in their workload. One teacher pointed out how frustrated he had become when students,

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expecting a reply to their email immediately, kept resending the same message or demanded why they had not yet received a reply. As he described:

Some students expected us to reply to their email queries straight away and this was sometimes well into 'out-of-school' hours. I found this very intrusive. Rather than deal with students and student issues during school time, I was being required to respond to student demands at night ... since the school re-opened, I am still getting a large number of individual queries from students! ... [the mounting emails are due] ... to escalating student expectations and demands ... their expectations and what we can actually do, need to be carefully matched and stated.

Another teacher stated:

There's a dislocation of fixed time and place, in working online ... this can be wonderfully liberating, increasing the flexibility of the way I can work. At the same time students can contact me anytime and at all hours and though I need not respond immediately, if my computer is on I feel compelled to answer these queries to provide space the following day for other work ... But when I log on the next day, there's more messages ... the pile requiring responses never seems to get smaller.

Another teacher was more sympathetic and recognized the need for more flexibility. She understood that some students have siblings and had to take turns in using the Internet. The teacher went on to say: "... this means that one child has to wait for the other to finish and therefore he/she might have to wait till after school hours before getting online, reading and responding to my class activities."

For some teachers interviewed, new technologies offered new opportunities to 'warehouse' content, a strategy not often used prior to SARS. From comments made in the interviews, it was apparent that there was a tendency to try to do too much during this period and to use the new digital technologies to deliver large amounts of additional study materials, resources and information for students. For other teachers, the new technologies were used simply to record their 'lecturers', which were placed on the school's website for students to download when convenient. Some indicated that they would continue to record 'lectures' in the future, "... in order to continue providing learning opportunities during the not infrequent single day closures due to monsoon or typhoon weather conditions in Hong Kong."

It is clear from the interviews that handling new ways of communicating between staff and students during SARS was not straightforward. All teachers interviewed, whether they saw the new ICTs as an opportunity or a threat, agreed that the SARS closedown had highlighted the fact that there was much that still needed to be learnt about using the technologies appropriately.

There was agreement amongst the eight teachers interviewed that they need various kinds of professional development and support, particularly in further technical training. They also need support in maintaining the new online environments, class and subject folders, etc. There was, however, only a limited demand for professional development support. Two teachers who identified themselves as 'innovators' and 'early adopters' (Rogers, 1995), felt they had enough technical understandings of ICT to use the technology well. On the other hand, they were also the group who requested more professional development assistance, especially in new ways of using ICTs to improve student learning. The other six teachers, in general, did not see the need to find new ways to work or help in rethinking teaching and learning in online environments. Teaching and learning online was not a key issue. The majority of those interviewed indicated that gaining technical help and training was more important.

The perceived need for professional development was for local technical support, not staff development support. Technical support was also seen to be most useful if it was provided on the spot, 'just-in-time', when needed, rather than through attending workshops.

Out of the eight teachers interviewed, most felt that there were advantages in working with the new technologies, though the kinds of opportunities available differed greatly between longer term experienced users of ICTs and novice users, and from subject to subject. The SARS induced close down was certainly an opportunity for those willing to experiment with using ICTs to do so intensively, but the fact that the schools closed down so quickly meant that proper preparation time for ordered use of ICT was limited.

Overall, teachers who did use technology to work with their students during SARS considered their individual experiences of working with the ICTs would benefit their ongoing use of it. There was a general feeling that familiarity with new technology over time would result in better understanding and an improved way of working with it.

### **Changing practices**

This section of the paper explores teacher views about the changes they see occurring in their professional practices influenced by the use of ICTs and a growing awareness that different technologies privilege different types of applications.

All interviewees noted that they had underestimated not only the time needed to develop online materials but also the time needed to teach online. One teacher reflecting on her experiences during SARS noted:

... do I want to teach this way if it involves so much more hard work than the 100% face-to-face teaching? Will I continue with this innovative teaching approach when the full pressures of normal working resumes in schools? I'm not sure I will!

Three interviewees accepted the increase of workload and said that they felt, that in the longer run, this would provide overall benefits both to student learning opportunities and to their teaching. Others deliberately avoided responding to student electronic messages, leading to some problems for students, who expected prompt replies to their emails.

Where adequate support was provided, teachers were generally keen to use the technology. On the other hand, with little time and support, many teachers were not keen on any major commitment to using new technologies.

I have less time now than ever before. I have no time to talk to other staff either. IT takes up a lot of my time. I'm now committed [and] I want to continue. ... but I need to be given more time to do the work properly.

Several months after schools re-opened two interviewees stated that they built on their experiences with ICT during SARS and had made real savings in time by working with new technology. They note there are advantages to rethinking certain processes and procedures, for example, changing assessment activities, increasing peer review, and providing more self-reflective activities. These have resulted in less time used marking student work. As one teacher explained:

We use online technology ... also as a communications mechanism. Essentially, computer conferencing is a great way to connect forty-five students, set up groups of four or five students and make them work collaboratively. And then you have only got seven or so entities you have got to interact with, not thirty-five. So ... you can provide individual students with significantly more input than they would get in a one to forty-five ratio class.

Another teacher noted:

Once the school re-opened and with the help of the school's IT Co-ordinator, I've been able to re-write some of my [senior class] lessons, which over the last few months have changed in overall form and delivery. ... my 'live' presentations used to be the main form of providing information ... Now much of the information is available online, and my time is freed up a bit for other things. ... The pressure I used to have in class to get across information has reduced. ... I can now use class time more informally to ask and answer student questions. ... Getting students to think about the work they have done online.

Now I like to think that the class is much more controlled by the student - in the question and answer or problem-solving pattern ... those that feel very comfortable with the subject or topic and don't feel they need much tutorial advice carry on working in groups ... Those that really need help, come to me. Of course, it's never as simple as this, as those students that are in real need of help often don't ask ... I've yet to work out how to deal with the new situation. I'll work out a way somehow. It's all part of working in new ways. It's a journey with no end ... there's always room for improvement.

With other teachers, the reverse happened.

Using the ICTs during SARS created a lot of work for me. With the rush to get through everything I need to, there's just no time to think about changing how I teach ... or changing content during ordinary school hours. And anyway, we have considerable pressures placed on us by the principal and by parents. If we make too much radical change, the parents will complain.

She elaborated on the difficulties of using ICTs in the aftermath of SARS...

We're all still very traditional here in Hong Kong, very exam oriented and parents really only want us to focus on the syllabus and cramming information into their kids to get the best possible marks in the exams ... Until the exam system changes, I can't see much support for the more radical ways of teaching and learning that this technology seems to support well.

During SARS, several teachers stated that their online discussions with students were distinctly different from other forms of communication. Two teachers who set up Yahoo discussion groups were unsure how best to use the forum to attain the teaching goals they had set themselves. The tutors valued student discourse from a social constructivist perspective; that students would construct their own knowledge, and more effectively, if they communicated with each other and with their tutors. But it was recognised that the online environments offer varied hybrid forms of 'talking-by-text', leading to different types of discourse (Geelan et al., 1999), combining some of the linearity of text with the interweaving of open and critical forms of conversation: different computer mediated communications or CMCs, as such, privileges different and quite unique discourses. "Ignoring the affordances and constraints (or the inherent bias) of technology is likely to result in incompatibility between tasks and tools" (Zhao et al., 2004, p. 25). As one teacher pointed out:

This is a very distinct and fertile environment. ... it requires a different way of working as a teacher and a different way of studying for students. ... I started not knowing how I would go about doing what we wanted - to get students involved in a rich discourse ... I wasn't sure how best I could facilitate appropriate discussion ... not quite understanding the quality of that discussion or what it would require to keep it going. It's been very much a learning process for all involved - for me and my students. My experiences in particular incidents of discourse have provided me with new understandings and insights. Before SARS, I'd experimented a little with online forums but the richness of the discourse was limited, in part this was due to the way I lead the discussions rather than stimulating and facilitating the discussions, I think I lead too strongly. ... but during SARS and the enforced school closedown, I've done things differently and students have taken far more responsibility for the interactions online. ...some students have a strong commitment and desire to participate in discussions.

Another teacher who used Yahoo forums noted:

...[Yahoo forums] only works with the more mature classes ... During SARS, I got 21 out of 35 students participating in the forum ... I got them into groups of four. ... Yahoo sent emails to students telling them to register, ... I then set times for the class to meet. I used the normal face-to-face class times. This worked well. Students shared files, asked each other questions for clarification of tasks I had set. ... But it all took more time to set up than I expected and it took quite a while for students to get used to working this way. Answering student questions took a lot longer than I expected too. I also had to control unnecessary social chit chat and keep students on task. Kids often dropped in discussions late and they needed further explanations of what was going on by me. The whole experience was quite intense even with only four in a group. ... So I will try to use Yahoo again, though I need to set time limits, clarify roles and responsibilities and give students the discussion topic in advance.

## Discussion and conclusions

The SARS crisis provided a catalyst for intensive ICT use. Teachers were inducted faster than they liked or thought possible into ways of using ICTs. This period highlighted both the problems and the potential of different ICTs as channels for teaching and learning. Teachers who used the technology during SARS were forced to think differently about ICTs. Discoveries made during SARS have continued to shape and inform subsequent ICT use. This period of ICT use brought to teachers' attention that these technologies are not pedagogically neutral nor necessarily passive (Idhe, 1990; Levy, 1997), nor are they necessarily appropriate for substituting one form of delivery for another. Technologies are biased because they are built for particular purposes (Bromley, 1998), which means that they are undoubtedly useful for doing some things but not for others. For example, PowerPoint is better for presentation than for word processing! Ignoring what various technologies privilege is likely to lead to incompatibility and poor or inappropriate use of the technology.

The negative effects of using ICTs during SARS were also due to the lack of preparation in the face of the sudden closures and the novice status of both teachers and students in using ICTs in the way required during SARS for teaching and learning respectively. They cited an inability to maximize the participation and quality of the work of all their students and to manage the amount of emails they were receiving as the main issues to overcome in subsequent ICT use. The positive effects of using ICTs during SARS included a deeper understanding of their potential, and in some cases a complete change in teaching strategy, moving towards a use of ICTs which made it possible for the teacher to value the input of the students and to adopt a more student-centred style of classroom teaching.

Most of the teachers interviewed wished to build on their experiences with using ICTs during SARS and identified the provision of a school based, on-the-spot level of technical support as key to their continued motivation to do so in an already packed working schedule. This type of technical support is essential to teachers in terms of setting up and maintaining collaboration via the Internet for example, and making sense of and remembering procedures at a time when they genuinely need to apply them. They need to learn technical strategies for using ICTs to maximize students' participation and making better use of class time. Clear guidelines need to be set and made explicit and routines established for viewing and responding to emails so that expectations are realistic and can be met without overloading teachers.

In addition to ongoing technical support to help train the teachers, students need also to be inducted into the use of ICTs in order to optimize the potential of their learning experiences in this mode and their efficiency in using it. Consistent with current curriculum directions the use of ICTs provides an imperative for guiding students towards developing more independent learning strategies in terms of how to set their own goals in relation to those defined by their teachers, how to search for and select information appropriate to achieving those goals, how to work collaboratively using ICTs with peers and teachers and how to evaluate their own progress and edit outcomes. This impacts also on the current, very exam orientated system of assessing students which compels teachers and students to cover a lot of content, often at the expense of learning how to learn. In line with current curriculum directions the use of ICTs provides a context for moving away from the examination system towards a more holistic, ongoing form of assessment of work done online or otherwise as well as in portfolios etc. thus putting emphasis on the process as well as the product of school work and in turn freeing teachers and students from the imperative of covering the content of the exam syllabus to focusing on more developmental, student friendly ways of working in the classroom and online. This would allow teachers and students more time for the "radical ways of teaching and learning", described by one teacher in this study, "that this technology seems to support well".

The interviews with these teachers revealed conflicting views and beliefs, and varied experiences and concerns about the new technologies in educational settings. There is no single level of knowledge or ability in using new technologies, and there can be no single voice from those teachers interviewed. What did become clear as a result of ICT use by teachers and students during SARS was a more intense and reflective examination of the opportunities the technology offered, and its impact on education in Hong Kong.

Data collected in this study is not representative of what happened in all schools in Hong Kong. Nevertheless, the study does give a small view of what happened in Hong Kong during SARS from a teacher's perspective.

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