

## ICT IN MALAYSIAN SCHOOLS: POLICY AND STRATEGIES

by

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### Background

Malaysia implemented the first computer system in 1966. Since then, the Government has introduced various initiatives to facilitate the greater adoption and diffusion of ICT to improve capacities in every field of business, industry, education and life in general. These measures include the enhancement of education and training programmes, provision of an environment conducive to the development of ICT, provision of incentives for computerisation and automation, and the creation of venture capital funds. Currently, Malaysia is making every effort to steer the economy towards a knowledge-based one. On July 2001, the Deputy Prime Minister announced that Malaysia's K-Economy Master Plan was in the final stages of formulation.

Malaysia also has a long-term vision, usually referred to as "Vision 2020" which calls for sustained, productivity-driven growth, which will be achievable only with a technologically literate, critically thinking workforce prepared to participate fully in the global economy of the 21st century. At the same time, Malaysia's National Philosophy of Education calls for "developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious."

In order to support the country's ICT master plan and in line with the country's drive to fulfil Vision 2020, the education system has to be transformed. The catalyst for this transformation will be ICT-enabled Smart Schools. In addition to the Smart School project, the Ministry of Education is also attempting to reduce the digital divide that exists in the different parts of the country by providing computer laboratories to thousands of schools. Other ICT-related projects involve the training of teachers, school administrators and other school staff. Innovative projects like the use of electronic books and e-learning are also being piloted to ensure their feasibility before any roll-out to all the schools in the country. Non-governmental agencies are also very much involved in the drive to introduce ICT into schools.

### ICT in Education

The Ministry of Education sees ICT as a means, not an end in itself. As such, all efforts are concentrated on developing new media as tools in the service of richer curricula, enhanced pedagogies, more effective organisational structures in schools, stronger links between schools and society, and the empowerment of disenfranchised learners. The Ministry believes that properly designed and implemented computing and communications have the potential to revolutionise education and improve learning as profoundly as information technology has transformed medicine, finance, manufacturing and numerous other sectors of society. Technology is not seen as a "vitamin" whose mere presence in schools can catalyse better educational outcomes. Technology is also not seen as simply another subject in the curriculum, suited primarily for teaching students to use tools they may encounter as adults.

The concept of ICT in education, as seen by the Ministry of Education, includes systems that enable information gathering, management, manipulation, access, and communication in various forms. The Ministry has formulated three main policies for ICT in education.

The **first policy** is that of ICT for all students, meaning that ICT is used as an enabler to reduce the digital gap between the schools. The **second policy** emphasises the role and function of ICT in education as a teaching and learning tool, as part of a subject, and as a subject by itself. Apart from radio and television as a teaching and learning tool, this policy stresses the use of the computer for accessing information, communication, and as a productivity tool. ICT as part of a subject refers to the use of software (e.g. AutoCAD and SCAD) in subjects such as "Invention" and "Engineering

Drawing.” ICT as a subject refers to the introduction of subjects such as “Information Technology” and “Computerisation”. The **third policy** emphasises using ICT to increase productivity, efficiency and effectiveness of the management system. ICT will be extensively used to automate and mechanise work processes such as the processing of official forms, timetable generation, management of information systems, lesson planning, financial management and the maintenance of inventories.

### **ICT Initiatives by Government Agencies**

#### **The Malaysian Smart School**

The Malaysian Smart School was launched in July 1997 by the Prime Minister as one of the Multimedia Super Corridor’s Flagship Applications. The aim was to capitalise on leading-edge technologies and the rapid deployment of the MSC’s infrastructure to jumpstart deployment of enabling technology to schools. This was done by creating a group of about ninety pilot schools in 1999 that will serve as the nucleus for the eventual nationwide roll-out of Smart School concepts, materials, skills and technologies.

The aim of these Smart Schools is to help the country achieve the aims of the National Philosophy of Education, as well as to foster the development of a workforce prepared to meet the challenges of the 21<sup>st</sup> century. Transforming the educational system entails changing the culture and practices of Malaysia’s primary and secondary schools, moving away from memory-based learning designed for the average student, to an education that stimulates thinking, creativity and caring, caters to individual differences and learning styles and is based on more equitable access.

The Pilot Project is trial-testing the Smart School Integrated Solution, which involves the following main components:

- Browser-based Teaching-Learning Materials (and related print materials) for Bahasa Melayu, English Language, Science and Mathematics
- A computerised Smart School Management System
- A Smart School Technology Infrastructure involving the use of IT and non-IT equipment, Local Area Networks for the pilot schools, and a virtual private network that connects the pilot schools, the Ministry’s Data Centre and the Ministry’s Help Desk
- Support services in the form of a centralised Help Desk, and service centres throughout the country to provide maintenance and support
- Specialised services such as systems integration, project management, business process reengineering, and change management.

The Pilot Project is scheduled for completion in December 2002.

#### **Internet Usage**

The website, MySchoolNet, was set up by the Ministry of Education to help increase the use of ICT in education, providing links to help teachers and students access educational information readily.

The Ministry also encourages interactive communication between Malaysian school children and students from other countries. An example of such a project is the Ministry of Education – British School Link Project which enables students from four schools in the Klang Valley to exchange e-mail and video-conference with their peers in four Coventry schools in the United Kingdom.

#### **ICT Training In Schools**

The Ministry of Education recognises that training is a vital aspect in the implementation of any project. The model that the Ministry uses to disseminate training is the cascade model. Selected master trainers undergo training, later to pass on this training to selected trainers,

who in turn, train their colleagues at school, district, or state level.

Various agencies within the Ministry of Education conduct training: for instance, the Teacher Education Division handles the pre-service and in-service training of teachers, while the Institut Aminuddin Baki conducts training for heads of schools and other school administrators. Orientation courses are also conducted by the Educational Technology Division, the Curriculum Development Centre, the Examinations Syndicate, to name a few. In addition, the State Education Departments, the State Educational Resource Centres, and the Teacher Activity Centres also conduct specialised short-term courses.

To date, the Teacher Education Division has trained at least 55,000 teachers in the last few years. About half of these teachers went through in-service training, while the other half were teacher trainees trained in the Teacher Training Colleges. It is now a requirement that all teacher trainees at the Teacher Training Colleges be exposed to ICT literacy, and the use of ICT in pedagogy.

The Institut Aminuddin Baki, or IAB, has trained more than 2000 education managers since 1996, and they would have disseminated the necessary knowledge and skills to their colleagues back in their schools or colleges. With the current expansion of their training facilities, IAB should be able to take on the training of more personnel each year.

The Curriculum Development Centre also trained a number of teachers in conjunction with the Computer in Education Programme. This programme started as far back as 1992, even before the introduction of the Smart School. The programme focussed exclusively on ICT literacy at first, but in the last few years, the emphasis has shifted to getting the teachers to use ICT in the classroom during lessons. 636 primary and secondary schools, the majority of which were rural schools, were involved in this programme. More than 3000 teachers and about 260,000 students benefited from this programme.

Nonetheless, all the figures mentioned above do not take into account those teachers who have obtained diplomas or degrees in computer science and other ICT fields. The figures also do not include those teachers who have been trained at school, district, or state level. And lastly, the figures exclude ICT-savvy teachers who have learnt on their own as part of their on-the-job responsibilities.

### **The Computerisation Programme in Schools**

The Ministry of Education is implementing a computerisation programme in schools in three stages. The purpose of the computerisation programme is to introduce ICT literacy to as many schools as possible, and thus reduce the digital divide to some extent. Later, the Ministry will be issuing guidelines to the schools involved in the computerisation programme to help them prepare for upgrading to Smart School status.

The first stage of the computerisation programme, a pilot project, was carried out in March – June 2002, and involved 18 schools in six selected states. A computer laboratory was built for each of these schools. All the laboratories were handed over to the Ministry in November 2000, and these laboratories are being fully utilised by the schools concerned. The second stage, referred to as Phase I, started in November 2000. 2400 schools were selected. As of February of 2002, about 43% of the buildings have been completed. The third stage, Phase II, began in November 2001. The Ministry expects the buildings to be completed and handed over by the third quarter of 2002.

### **The Electronic Book Project**

In 2001, the Ministry initiated a pilot project involving the use of the electronic book or e-book. The Ministry was interested to see how this device which stores electronic textbooks and links the user to the internet can be used to improve teaching and learning in the classroom. The Ministry was also interested to investigate the use of the e-book to replace conventional textbooks and thereby resolve the perennial problem of heavy school-bags.

The pilot project was conducted in 35 schools over a period of five months. The company involved in the pilot project supplied 2491 e-books to the schools. More than 400 teachers and about 2000 students were involved in the project. Initial findings indicate that the device does improve computer and technology knowledge, as well as engage students in reading and learning.

### **Penang E-Learning Community Project (SIPI)**

An example of a state-initiated project is the Penang E-Learning Community Project, spearheaded by the Penang State Government. This project was started in 1997 and is mainly managed by the Science University of Malaysia in Penang. The project involves the creation of web presence, web tools that promote collaboration and web-based services to the community to obtain sought-after information. Components of services delivered include e-mail, web hosting, electronic discussion and the creation of searchable databases. Project milestones include compilation of current content to be migrated to the E-Learning Website, which is being developed to host homepages for at least 100 schools in the state. No equipping of hardware and software is involved.

According to a report dated September 2001, some 300 teachers from 157 schools (about 50% of the schools in the state) have been trained in web page development. Some 100 schools have uploaded their web pages already, with another 29 waiting to do so.

### **ICT Initiatives by Non-Governmental Agencies**

#### **The Chinese Smart Schools**

This project is directly related to the efforts of one of the political partners in the country's ruling coalition party. The project aims to set up computer laboratories in more than 100 selected Chinese stream primary schools throughout the country, for the purpose of ensuring ICT literacy of school staff and students. The project also involves the use of selected courseware for classroom pedagogy.

#### **Private Smart Schools**

The Smart School concept is no longer considered a fashionable luxury, but rather as the only way forward. This is evident in the adoption and adaptation of the concept by at least three private schools in the Klang Valley. These schools have incorporated multimedia technology and worldwide networking, in addition to using ICT as part of the teaching-learning environment and as a subject proper.

### **Implementation Strategies**

The Ministry is committed to utilising the following multi-prong strategies to ensure that the objectives of ICT in education are achieved.

- The preparation of sufficient and up-to-date tested ICT infrastructure and equipment to all educational institutions
- The roll-out of ICT curriculum and assessment and the emphasis of integration of ICT in teaching and learning
- The upgrading of ICT knowledge and skills in students and teachers
- Increased use of ICT in educational management
- The upgrading of the maintenance and management of ICT equipment in all educational institutions

### **Conclusion**

Introducing ICT into all schools in the country is a major undertaking, but it represents an investment in the future productivity of Malaysia's workforce and a down-payment on the country's future prosperity. It will require a major commitment of resources, but the country will benefit from the change for many years to come.

Success will require support from many stakeholders, including all agencies in the educational system and sufficient funds to establish and maintain ICT in the schools. In addition, policies, norms, and guidelines will have to be established to promote the use of ICT in schools. Lastly, continuing professional development for teachers, school heads, and other educational personnel must be instituted.