Component 4

ICT in Schools – Policy, Vision and Strategy
Very often ICT is merely attached to existing classroom teaching and learning activities, leaving the traditional curriculum, learning objectives, teaching strategies and student learning activities more or less intact. While the learning medium may have changed, from textbooks to web-based books or from PowerPoint presentations in class to PowerPoint presentation via the Internet, the learning paradigm remains the same. For example, the learning paradigm adopted for PowerPoint presentations of certain concepts in the classroom is a cognitive one, where learning is associated with the transmission of knowledge. This paradigm may be adopted when the same concepts are taught via the Internet, with the same PowerPoint presentations made available online. Although ICT may facilitate independent self-paced learning, the potential of ICT may not be optimized if there is no shift in the learning paradigm. This component examines and explains how ICT vision, policy and strategy are formulated and implemented to integrate ICT in education. The focus is on (i) ICT in schools: vision and plan, (ii) supporting policies that facilitate uptake of ICT, (iii) management of ICT resources, (iv) translation of laws into acceptable school-level policies, and (v) parents and community involvement.
Lessons learned

Based on the six case studies, the following lessons learned are generated:

1. ICT in Schools: Vision and Plan
   - A clear vision of ICT integration in schools that is shared by all members of the school community promotes effective use of ICT in the classroom.
   - An ICT master plan that is formulated according to a school’s vision and its socio-cultural setting assures effective integration of ICT.

2. Supporting Policies That Facilitate Uptake of ICT
   - To promote ICT uptake in schools, school leaders should initially adopt strategies that make ICT a part of the daily routine or tasks of the teachers.
   - To promote use of ICT in schools, the MOE should set guidelines for schools on the integration of ICT in the curriculum, without necessarily imposing these as rules or regulations to be strictly adhered to.
   - ICT use in schools is more likely to be facilitated if school leaders employ strategies that provide teachers with a platform and support for the integration of ICT in the school curriculum.
   - Appointing an ICT coordinator or head of ICT department in each school helps to ensure administrative and pedagogical support for the teacher.

3. Management of ICT Resources
   - Carrying out a SWOT analysis and applying its findings help to optimise use of ICT resources.

4. Translation of Laws into Acceptable School-level Regulations
   - Translating ICT in education policy and laws into a set of school-level regulations and procedures provides a clearer blueprint for schools on the use of ICT.

5. Parent and Community Involvement.
   - ICT bridges and strengthens the home-school connection and, if properly harnessed, promotes parents’ activities and involvement in the school.
   - When parents are encouraged to participate in and contribute to change management activities within a school’s ICT master plan, change occurs more quickly.
   - As ICT opens opportunities to collaborate with different organizations and people in local and international communities, schools should establish linkages with different communities to help in developing the overall character of students.
Synthesis of Experiences

**Issue 1**

**ICT in School: Vision and Plans**

A clear vision of ICT integration in schools that is shared by all members of the school community promotes effective use of ICT in the classroom

Teachers need to know exactly how ICT is used as a teaching and learning tool. Many researchers have pointed out that a school’s ICT vision is essential to effective ICT integration (Kerr, 1996; Murphy & Gunter, 1997; Anderson & Dexter, 2000). Ertmer (1999) wrote, “A vision gives us a place to start, a goal to reach for, as well as a guidepost along the way” (p. 54). Means and Olson (1997) thus recommend that teachers and schools develop a vision before they make substantial investments in hardware and software. Moreover, the vision should not be created by a single person or through a top-down process starting from the MOE. It is crucial to involve those who have a stake in the outcomes, including teachers, parents, students, and the community, and allow them to assist in the creation of the vision by contributing their knowledge, skills, and positive attitudes. An ICT vision that is accepted by all becomes a shared vision, which is critical to successful implementation of ICT in a school setting (Costello, 1997).

a. **Singapore**: In interviews conducted by IDA (http://schools.s-one.net.sg/findings1.html), respondent teachers, heads of departments and principals offered various perspectives of their respective schools’ vision of ICT use in education. The respondents were aware of the importance of the schools’ vision, which some used as a benchmark for becoming top academic and elite schools in the forefront of ICT integration. Others considered the vision as a guide to ensure effective deployment of ICT in teaching and learning. The Crescent Girls’ School’s vision is to deploy ICT to reach out to the community at large, that is, ICT must serve the community. The provision of a pervasive ICT environment to improve the quality of life of teachers and students is the vision of Victoria Junior College. Both infrastructural and innovative interactive multimedia courseware contents are planned to meet the college’s objectives. The vision of Rosyth Primary School is to embrace ICT to achieve administrative and academic excellence and to help students appreciate the relevance and appropriate application of ICT. These visions of ICT are consistent with that of MP1 and MP2, where ICT is seen as an enabler to enhance teaching, learning and administration in the schools.

b. **Thailand**: Most schools do not have their own ICT vision and plan as the ICT infrastructure and training are generally directed and given by the Ministry. The school-level vision and plan (if any) are usually established by individual school principals who perceive ICT as a tool for improving the quality of education. The school board takes all decisions on the purchase of ICT tools, a procedure that is usually met with some resistance from the teachers as they do not always share the same vision as the principal or the ministry nor do they feel a sense of ownership of the plan.
Some issues that should be considered include staff and student development in ICT-related skills, curriculum and assessment, ICT facilities and resources and support teams (both technical, administrative and pedagogical). Once the vision has been successfully created and accepted, the next step is to articulate an ICT integration plan, spelling out how the teachers are expected to integrate technology in their lessons (Strudler & Wetzel, 1999). An ICT integration plan provides a detailed blueprint of the steps and methods needed to translate the school ICT vision into reality. Developing ICT integration plans is no doubt a complex and time-consuming task, but they are usually well worth the time required to put them together (Hoffman, 1996).

a. Malaysia: Initially, the Smart School Pilot Project was perceived as “just another Ministry pilot project”. None of the heads of the pilot schools planned any formal or non-formal change management programme for the staff and students. The Smart School Pilot Project Team had to ask the schools to develop their own change management plans, with activities for in-house training, dissemination of information, and coordination meetings. These change management plans that were part of the ICT integration master plans were to be incorporated into the schools’ existing vision and mission.

b. Singapore: Most schools have ICT integration master plans that have been customized for their own school culture and environment. These master plans address the following issues: (i) priorities for implementation of the ICT master plan (e.g. staff, students, content areas), (ii) evaluation standards and benchmarks to indicate effective integration of ICT, (iii) responsibility for successful implementation (e.g., ICT committees, administrative personnel, teachers, technical support staff), and (iv) funding requirements and time available to implement ICT integration efforts.

These strategies may include using e-mail as the mode of communication among staff, accessing the Intranet to download forms and using a word-processor to complete lesson plans for submission. The school leader should be a role model and should make ICT a tool in his/her everyday life.
a. **Singapore**: Some means by which school leaders have facilitated the uptake of ICT in the schools are as follows: (i) sending out school announcements via e-mails to all staff; (ii) requiring all teachers to submit their weekly lesson plans via e-mails to their heads of department; (iii) uploading all forms (such as transport claim, leave application, training development application, and medical claim) on the school intranet for teachers to download; (iv) encouraging staff to communicate and share via e-mail and other asynchronous and synchronous ICT tools; and (v) requiring teachers to submit their class daily attendance via the online portal. These measures ensure that ICT gradually becomes part of the school culture and helps some “technophobic” teachers to overcome their initial fear of ICT.

To promote use of ICT in schools, the MOE should set guidelines for schools on the integration of ICT in the curriculum, without necessarily imposing these as rules or regulations to be strictly adhered to. Rules may stifle creativity and may lead to a technologically-driven approach to ICT integration. School leaders should be given the autonomy to decide on how to implement rules and guidelines based on their analyses of their schools’ readiness.

b. **Philippines**: Respondents to the 2001-2002 survey on ICT utilization in secondary schools considered three main goals in using computers in the schools: preparing students to join the workforce, improving student achievement, and making the learning process more interesting. The promotion of active learning, individualizing the learning process, and encouraging cooperative learning, although not considered unimportant, were less of a priority, suggesting that technology intervention was still focused on the acquisition of basic technical skills and was still embedded in traditional pedagogy (Tinio, 2002). This is in contrast to the shift in emphasis in the new national curriculum - the Revitalized Basic Education Curriculum or RBEC - from technology literacy for its own sake, to the effective application of ICT across the curriculum, especially in Mathematics and Science. Indeed, it would seem that there is a gap between what is prescribed at the national level and what is being done at the school level. There seems to be some confusion over what ICT capabilities are prescribed at the national and sub-national levels, with 87% of the schools claiming to need more guidance on this matter. All of the schools surveyed have indicated that they lack information on how to use ICT to support the curriculum (Tinio, 2002).

b. **Singapore**: Most school leaders consider MOE’s recommendation that 30% of the curriculum time should involve ICT use, as a guideline rather than as a rule or regulation. An increasing number of school leaders have realized over the last three years that ICT should not be integrated in the curriculum for ICT’s sake. Instead, they believe that teachers should explore ways by which to integrate ICT in the curriculum to enhance the learning experiences of students.
These strategies may include sharing sessions on ICT use among teachers, peer teaching and team-teaching based on an apprenticeship model, and employment of more technology assistants to support teachers.

a. **Indonesia**: A number of schools have integrated ICT use in education. Most of them have one or two computer laboratories, each with ten to twenty computers. Five to 10 of these computers are connected to the Internet. School leaders encourage teachers and students to use the Internet to seek information related to their learning needs. Some schools even have their own websites.

b. **Malaysia**: At the school level, the head of the school is the prime change motivator and change manager. He or she heads the school change management team and is responsible for developing both short and long-term change management plans and activities for all key stakeholders in the school. The school heads, senior assistants (deputy school heads), resource teachers for Bahasa Melayu, English Language, Science and Mathematics, School IT Coordinators, and School IT Technicians meet at least once a year at change management coordination meetings conducted by the Smart School Team.

c. **Singapore**: Some school leaders have adopted the following strategies: (i) planning contact time for teachers to share their experiences in using ICT in their lessons; (ii) initiating industry-teacher partnerships to deliver just-in-time ICT training for students and to develop instructional ICT-based materials for teaching and learning; (iii) peer-teaching of ICT-related skills based on the apprenticeship model or just-in-time learning; (iv) collaboration with other schools to share expertise and experiences on ICT integration; (v) equipping teachers with a personal laptop each so that they would be able to make ICT use a part of their lives; (vi) employing more technology assistants to support teachers in ICT use; and (viii) purchasing more laptops so that teachers would not be constrained by the unavailability of ICT facilities (such as computer laboratories and media resource rooms).

Appointing an ICT coordinator or head of the ICT department in each school helps to assure administrative and pedagogical support for the teachers.

This appointment should not be confused with that of a technology assistant. The ICT coordinator or head of department should advise teachers on ICT solutions to their teaching or learning problems, help teachers to acquire ICT resources, and conduct training needs assessment of teachers’ ICT-related capacities and advise them on their professional development.

a. **Indonesia**: A teacher with ICT competency is appointed ICT coordinator. He/she is responsible for the management of ICT use in
the school. As most ICT coordinators do not have ICT educational background. Therefore, training them in ICT-related skills is necessary. JIS (School Information Network), a program initiated by the Directorate of Vocational Secondary School intends to provide ICT training for teachers within the network.

b. **Malaysia:** The School ICT Coordinator is usually a teacher with ICT experience. To upgrade his/her skills, the MOE has an ongoing programme for upgrading ICT and pedagogical competencies, whenever necessary. An ICT technician who is not an educator usually assists and supports the School IT Coordinator.

c. **Singapore:** The ICT coordinator or head of department provides teachers with administrative and pedagogical support. He or she is a staff specialist whose main duties are to help teachers to coordinate ICT planning and development, provide administrative support by supervising computer facilities, order supplies, maintain hardware and software, liaise with hardware and software vendors and service personnel, and collaborate with teachers and school leaders in preparing hardware/software budgets, reports, and proposals. The coordinator or head also assists teachers in evaluating and selecting hardware and software and conducts needs assessments to determine additional hardware or software needs among the teachers and students.

### Issue 3

**Management of ICT Resources**

**lesson learned**

*Carrying out a SWOT analysis and applying its findings help to optimise use of ICT resources*

Without the application phase, a SWOT analysis is useless.

a. **Malaysia:** In the change management exercise conducted by the Smart School Pilot Project Team, the heads of the pilot schools analyzed their schools’ strengths, weaknesses, priorities, and available skills and resources. This information together with the organizational structure of the schools and the schools’ change management plans were documented and monitored by the Smart School Pilot Project Team with the help of the consortium. However, on-site monitoring of the schools’ implementation and adherence to their change management plans indicated poor compliance. Most of the schools cited lack of leadership, time and resources as reasons for not carrying out change management activities.

b. **Thailand:** SWOT analysis is generally undertaken at departmental level in the MOE prior to developing the ICT in education policy. However, such analysis is usually not applicable to school situations due to budget constraints and centralized national policy. Decentralization of educational management to the school level may encourage schools to do their own SWOT analysis in the next phase of the ICT in education policy.
Translation of Laws into Acceptable School-Level Policies

These policies and procedures should be in line with existing laws governing ICT at the national level.

*a. Malaysia*: One of the deliverables of the Smart School Integrated Solution was a set of school-level ICT policies and procedures. The Smart School Pilot Project Team reviewed these policies and procedures to ensure that they were in line with existing Ministry rules and regulations. The team also submitted the policies and procedures to the central agency responsible for all matters relating to ICT use in the country, i.e. the Malaysian Administrative Modernization and Management Planning Unit (MAMPU) in the Prime Minister’s Office, for their comments. The critical security policies introduced covered authentication and passwords, backup procedures, installation of firewalls, and use of licensed software.

*b. Thailand*: Sections 63-69 of the 1999 National Education Act, Chapter 9, support the use of technologies in reforming education. The Act serves as a regulatory framework for formulating major plans and policies, some of which are being implemented at both ministerial and school levels. They are the Plan for Development of Mass Communication and ICT for Human and Social Development (1999-2008); the MOE Master Plans for Educational Radio Broadcasting, Educational Television, and Educational Multimedia; Policy for the Production, Development and Usage of Materials and Other Technologies for Education; the National ICT Policy (2001-2010) by NECTEC; National ICT Master Plan (2002-2006) by MICT; MOE National ICT Master Plan for Education (2004-2006); and National Education Network Project (2002-2005). Some of these laws have not yet been translated to school-level policies and procedures. A recent ministerial regulation issued in late 2002 supports the policy for the production, development and usage of materials and other technologies for education. This regulation offers more freedom for schools to select quality educational materials of their choice.
Issue 5
Parent and Community Involvement

**lesson learned 1**

ICT bridges and strengthens the home-school connection and, if properly harnessed, promotes parents’ activities and involvement in the school

ICT facilitates linkages among schools, homes and communities, enabling teachers, peers, parents and members of the community to play a greater role in the students’ learning experiences. These experiences include engaging in authentic problem solving, working with researchers and honing their entrepreneurial skills. The bonds between schools and homes and communities are also strengthened through increased interaction and communication.

- **Malaysia**: One of the deliverables of the Smart School Integrated Solution is a feature in the computerized SSMS that enables parents to remotely access their children’s school records so that they can keep track of their progress. The feature became available in late 2002. It has yet to be fully utilized by parents, particularly those who have no Internet access.

- **Singapore**: A wide range of school activities involve parents and the community, due partly to school-industry partnerships and the autonomy given to schools in ICT in education master plans. Moreover, with better connectivity linking the school to the home and community, peers, teachers, and parents are able to play a more active role in the students’ learning experiences. One example is the “Learning Village” project in Outram Secondary School under the MOE-IBM Collaboration, a School-Community Web Collaboration System using the Internet to foster home-school-community connection and partnership. By connecting various stakeholders of education, the Learning Village has strengthened the school’s effort to achieve its mission: “An Intelligent School and a Caring Family”. The Radin Mas Primary School has set up a Parent Link website to promote rapport among parents and between the parents and the school, as well as to foster mutual support in shaping the overall character of students.

**lesson learned 2**

When parents are encouraged to participate in and contribute to change management activities within a school’s ICT master plan, change occurs more quickly

- **Malaysia**: Pilot schools in the Smart School Project were encouraged to include parents and the community in their change management activities. Parent-teacher associations took a keen interest in the development of the Smart School Project and helped to sponsor trips to the MDC for an inside view of the MSC’s work. Other PTAs sponsored talks by ICT personnel, and facilitated the schools’ participation in ICT-related competitions. The Smart School Pilot Project Team also organized a national seminar for representatives of PTAs from non-pilot schools as part of the Smart School Outreach Programme. In addition, the team gave talks and presented papers at seminars,
conventions, and meetings to help disseminate information about the Smart School Project.

b. Thailand: In most cases, parents, alumni and PTAs are great school supporters. School committees comprising students, parents and teachers are established across grade levels to work together on the students’ learning and to prepare proposals to obtain support from the school board or PTA. Parents not only provide hardware and software, but have also become resource persons. Some private schools offer ICT training to parents so that they can guide their children in the use of technology or even learn together.

c. Singapore: Parents, industry experts and academics are invited to work with schools to make meaningful contributions to the community (Soh, 2002). One example is the service-learning programme at Crescent Girls’ School (www.crescent.edu.sg) in which students use ICT in an innovative way to make a difference in the lives of less fortunate members of the community. In 2000, a group of secondary three students set up an e-commerce project, “Very Special Bazaar”, together with members of Peacehaven (Home for the Elderly), the Movement for the Intellectually Disabled of Singapore (MINDS) and The Very Special Arts Singapore. Art and craft pieces were put on sale via the web with an e-commerce engine and the proceeds went to the elderly and the physically and intellectually challenged in these organizations. Two other projects by the school involved the Singapore School for the Deaf (SSD), where hearing-impaired students and Crescent’s students co-designed digital art cards to raise funds. They also wrote, illustrated and translated some works into sign language to enrich teaching and learning resources for the hearing-impaired members of the community.

As ICT opens opportunities to collaborate with different organizations and people in local and international communities, schools should establish linkages with different communities to help in developing the overall character of students.