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The Culture of Information Technology in Schools

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The Ministry of Education (MoE) recently announced the plan to spend S$2 billion, over the next 6 years, to make learning with computers a way of life in the classroom This amount will be spent to implement information technology (IT) and to train teachers. A further S$600 million will be annually spent to maintain equipment at the state of the art level and for the continuing training of teachers. The aims being to ensure that by the year 2002, all schools will have a pupil-computer ration of 2:1; a teacher-computer notebook ratio of 2:1; free internet and email access for pupils and individual accounts for all teachers; and IT being used in 30% of all curriculum time across each subject (MoE, 1997). This is bound to revolutionise the information technology (IT) culture of schools.

The government initiative will ensure that IT is increasingly used in school administration and management, and in the teaching and learning process. From an educational point of view, the decision on using IT in an instructional setting should depend on the functions which it can serve to improve student learning in their area of need. The success of IT in schools will depend on whether it is used to provide an alternative culture of new and better ways of teaching. If IT is merely used to continue teaching in the same way, by incorporating it for the sake of using it, then the impact is bound to be minimal. IT has been used for the obvious, but the not so obvious like innovative use is lacking and needs to be encouraged, Problem solving and investigative tasks are two possible modes of creatively enhancing the use of IT and incorporating it within the Singapore curriculum. Student learning should be central and of paramount importance in comparison to the technologies. There is a lack of research on the effects of computers and other information technologies on learning to help inform the schools to develop an IT culture. Collaborative research between researchers and educators is required on a large scale. Models of implementation need to be studied and researched to develop and promote culture of IT use by teachers and students.

Current culture

Schools need to have a policy on the use of IT. Policy development for IT at the MoE and in schools must be a long term plan and should be dynamically evolving as the system and school pursues initial goals included within the policy. A good and visionary policy is never achievable as it should provide for continuing evaluation resulting in continual change and upgrading of the policy aims. Schools expose students to IT, mainly computers, in the hope of making them comfortable with its use. In most curriculum subjects, the chalkboard method is however still employed. Most schools and junior colleges are just beginning to incorporate IT within the various subjects. School administrators have to decide whether students should learn about IT, with and through IT, or a combination. Ways in which schools have attempted implementing a policy on IT in the curriculum include:

1 organising a computer room for student use in certain specific areas eg project work;

2 organising IT awareness or appreciation courses as part of the curriculum;

3 offering computer science as a subject;

4 using computers and related peripherals in laboratory work; and

5 using computers for administrative work.

The method used is governed by issues such as equipment availability, teacher competency and the general thinking of the staff members on the use and role of IT in the teaching and learning process (Dhillon, 1996).

Change in culture

To develop an IT culture schools need to decide the extent to which they are committed to meeting the learning needs of students for the future. IT needs to be integrated into the structure of the classroom activities in a purposeful and informed way (Khosrowpour & Loch, 1993). Classrooms have to be reorganised to provide ready and easy access to the information technologies as and when students need them for their learning. Teachers will readily and happily use IT if there is adequate supply and if the barriers to their usage are removed or eased. Schools need to work towards a classroom culture of the future where formal education will be a complement of traditional classroom exposure and individual networked access by the students (Collis, 1996) through a terminal not necessarily located in the

school. In this way the learning will be provided not just at fixed hours but will be available to students as and when they wish to pursue it. Some key aspects requiring change to enable the development of an IT culture are briefly cited below.

Access: To change the classroom culture individual access to networked computers, with teacher access to supervise, guide and direct students interactively through the system is required. The teacher could complement interactions not enabled by the system through direct access to the student as well. IT provides a new mode of pupil contact in the teaching and learning process. Modifying the old mode by merely incorporating IT in tiny ad hoc doses will not create a culture of IT use.

Policy and literacy: Schools need to seriously develop a dynamic policy on the role and use of IT in the school. Students could be introduced to computers and other information technologies and provided with basic IT literacy. Since IT literacy means many things to different people (Hade, 1982), each school will have to develop that which they think is of import in serving the present and future needs of their students.

Innovative use: Apart from using subject specialised software, schools need to further explore the innovative use of general purpose spreadsheets, database programs and word processing packages. These should be used across all subjects thereby providing students with a range of experiences in innovative applications of the commonly used software. Only through incorporation within every subject or a range of subjects will the culture of IT be developed and enhanced.

Specialist databases: IT supplies access to databases in a variety of subjects. Currently a major hindrance to learning is finding information. Schools together with the Ministry of Education and parents, need to identify and explore the use of on-line databases to support learning and also to develop databases especially of a Singapore context.

Multimedia: Schools that own encyclopaedia sets often find it a problem to keep them updated. CD-Roms which provide information on compact disks and enable the students to read the information .provide a rich alternative. These can easily be incorporated with hypermedia or multiiedia systems to provide richer and more meaningful learning experiences.

Complementary home use: Schools can tap the rich resources available in the home. Teachers need to consider computers as a home learning resource and should involve the parents in helping to meet the learning needs of the children. Schools in collaboration with parents can develop local networks to pool the expertise of the community for the benefit and learning of the children. Such a culture would also foster closer relations of the parties involved in the education of the children.

Internet and email: The internet can serve the purpose of connecting and bringing learning from the international stage to the school and home and vice-versa. Email provides alternative communication access between students and teachers within and between schools on a national and international scale. A culture of increased use of electronic means of communication will make the use of IT common place.

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