Leapfrogging Across the Millennium: Information Technology in Singapore Schools

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Singapore’s future economic progress and success depends on an educated workforce which has to be creative, knowledgeable, and strong in Information Technology (IT). IT plays a vital role in the workplace at present and in the future but is the Singapore’s education system preparing the students for this? The Government has responded well to this challenge and has committed large resources to the use of IT in schools. It has implemented various programmes to help students acquire IT skills in the past and recently, proposed a number of innovative approaches to help students face the future challenge. A national IT master plan for education is at present being developed and it will take the schools into next millennium.

“We will use IT to encourage students to learn more independently, to learn actively. They must learn to locate information in databases around the world, sieve through them, analyse what they get, and apply it to their projects in innovative ways. These will be key skills for every worker in future.”

Prime Minister, Mr. Goh Chok Tong, (1996b, pp.8)

The Singapore’s economy depends on a healthy, flexible and forward-looking education system. With no natural resources, Singapore must depend on its workforce to sustain its economic growth, and this workforce needs to be well-educated and trained. Singapore cannot boast of a huge population to supply workers to labour-intensive industries. Instead, Singapore is concentrating on the development of knowledge-intensive activities. This was clearly stated by the Prime Minister, Mr. Goh Chok Tong, when he addressed the nation in the 1996 National Day Rally. In his speech, he stressed that the country needs “a healthy and high quality population - disciplined, well-educated and trained, with everyone’s talents cultivated to the fullest” (Goh, 1996a, pp. 44) in order to sustain the exceptional performance of the nation. He further added that with a better workforce, the country can attract more foreign investments, and able to spot and seize various economic opportunities faster. The nation, he added, can also develop various knowledge-intensive activities, like design and development work, software development and design, or adapt technology to cater for regional markets. The Government has viewed education as so important that in the 1996/1997 Annual Government budget, 20.3% of the entire annual expenditure budget was allocated to education, second only to Defence (29.1%) (Ministry of Finance, 1996).

With this economic goal in mind, the Government introduced various programmes into the education system to try to cater to different societal and economic needs. Recently, the Government re-examined the education system and have identified three areas of needs that the education system could be improved. The first is to enhance creativity and to reduce the amount of drill learning by student. The second is to introduce national education to the schools, and the third, to
implement a school-wide use of information technology (IT).

The first goal of education reform was to encourage more creative thinking in schools. The education system in Singapore is working well judging from the high rates of passes and distinctions in examinations. For example, in the International Association for the Evaluation of Educational Achievement’s survey of 45 countries on Science and Mathematics Achievements, Singapore came out tops in both sections (Nirmala, 1996, November 21).

But the Government currently felt that there was a need to promote a more flexible kind of learning outcome. The Prime Minister said this to Singapore’s teachers in a national address:

“...We have a good education system. Our schools have motivated our young to study, raised their levels of achievement, and produced very high rates of passes and distinctions in examinations. ...Now we need to look at the forces driving the future. We must make continual improvements to the education system and, where necessary, bold changes, to meet the needs of the next 20 to 30 years. Our future growth will be driven by knowledge and innovation. More than ever, our ability to succeed will depend on the adaptiveness and ingenuity of our people.” (Goh, 1996b, pp.5-6).

In addition, the Prime Minister also noted that while students in Singapore are disciplined, motivated and hardworking, the workforce of tomorrow needs to be “strong on creative and innovative thinking, and in dealing with problems that are not well-defined” (Goh, 1996b, pp. 6). This means that curriculum, teaching strategies and examination modes will need to be re-examined to determine how creativity and thinking skills could be fostered. He even suggested that curriculum time for content be reduced so that more time could be spent on project work that requires students to solve problems independently and be more innovative in their solutions. His views was also supported by the Education Minister Rear-Admiral (NS) Teo Chee Hean. In his address to the 32 South East Asian Minister for Education conference he said that Singapore’s education system has more or less achieved its quantitative goals and will in the future focus on qualitative goals and “the education policy will be guided by a future-oriented curriculum with a strong emphasis on harnessing the potential offered by technology” (Ghosh, 1997 February 2).

The second goal is to introduce national education into the school curriculum. The Government feels that the present generation of students are not aware of the nation’s history, geography, the constraints the nation faced and how it overcame them, survived and prospered, and finally, what the nation must do to continue to thrive. In July 1996, the Deputy Prime Minister, Brigadier-General Lee Hsien Loong, said that this lack of historical awareness is a “serious gap” in Singapore’s education system (Leong, 1997 February 10). Various actions have been undertaken to prepare a national education curriculum into the school system, for example, the setting up of a National Education Committee (Nirmala, 1996 September 6).

The third goal is to exploit the use of Information Technology (IT) in schools. The Prime Minister told the nation in his 1996 National Day address, that the Government will be spending US$1.1 billion on computers in the schools over the next five years. Every child in school will have access to computers and all teachers will be trained to use computers for teaching purposes. The long range intention is that with IT in schools, the young students of today will become very familiar with computers and thus as the future workforce they will be ready to work in a technologically inclined environment in the next millennium. Mr. Lee Yock Suan, the former Education Minister said in 1995, “In addition to providing all students with a strong foundation of knowledge in core subjects, we will need to sharpen their thinking and problem-solving skills and equip them with information technology skills” (“All primary”, 1995 December 7).

The current Education Minister, Rear-Admiral (NS) Teo Chee Hean has also reiterated the importance of these three priorities namely creative thinking, national education and the use of IT in schools. In particular, he stressed that IT could be used as a tool to foster creative thinking in the schools (Leong, 1997 February 10), and that these goals are also shared by professionals at the school level. Fourteen principals and educationists who were interviewed agreed with the Government’s move to make creative thinking and IT a priority in Singapore schools and moves it in the correct direction to produce workers who could compete in the 21st century (Nirmala & Wong, 1997, February 7).

The Education System in Singapore

Singapore follows a centralised system of education with English as a medium of instruction. The Ministry of Education acts as the central authority concerning education curriculum and policies. Individual schools are responsible for the implementation of the education curriculum. Singapore has adopted a primary, secondary and pre-matriculation system with six years primary school education, followed by four or five year secondary school education, and two year pre-university education in a junior college.

English is the medium of instruction but the emphasis of the education system is bilingualism—English and the Mother Tongue (Chinese, Malay or Tamil.) The primary school curriculum consists of English, Mathematics, Mother Tongue, Social Studies, Science, Music, Physical Education. A salient element in the education system in Singapore is “streaming” or (sometimes known as “tracking” in other countries.) At Primary 4 level, students are “streamed” according to their abilities into three different groups namely, EM1 (English and Mother Tongue at a higher level), EM2 (English and Mother Tongue as 2nd Language level) or EM3 (English and Mother Tongue at basic level). Generally, students at EM3 are of lower ability and will follow a simplified curriculum following streaming. At primary six, all primary school students sit
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