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# Education for living tomorrow: premisses for developmental planning

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States that the foreseeable future scenario of Singapore suggests the need to include premisses about the future in school developmental planning. Outlines a futuring process taught in Singapore as a possible way of obtaining such premisses. This five-step process includes a delphi survey. Gives results from three delphi surveys done in Singapore at the end of the article to illustrate the kinds of data that school leaders could use as premisses in developmental planning.

## Looking back from the future

Singapore, 2010. Singapore celebrates yet another good year. The city state has been riding the waves of high economic growth in the Asia-Pacific region, achieving a string of "firsts" in many and diverse areas of human endeavour. This garden city has long been a symbol of great possibilities for small countries. Having recently attained developed country quality of life for its citizens, the Republic now declares that it has achieved its target for free trade in the Asia-Pacific region, as spelled out in the 1994 Bogor Declaration of the Asia-Pacific Economic Co-operation Forum held in Indonesia. In the last decade, Singapore has become a fully enabled information society and has been hailed as the world's first fully networked society – one in which all homes, schools, businesses, transport systems and government agencies are interconnected in an electronic grid. The economy is a node in a vast global network of economies. It boasts a fully computer-literate workforce, employed in globally networked workplaces. It sees itself as a global city, with the world as its hinterland. Younger Singaporeans have experienced rapid changes in their lifestyle in this magical wonderland of technological applications. They can enjoy trying on clothes from their favourite store without leaving their living room, made possible by a giant wall screen by which the client can view the clothing and watch it being "fitted" electronically on to a lifelike self image. Students discuss with their professors from "collaborative" universities located all over the world and executives hold video conferences with investors in other countries right from their living room by the same giant wall screen.

The same technology enables professionals, like architects, engineers, lawyers, teachers and medical practitioners, to gain access to diverse databases and to demonstrate the efficacy of their ideas and innovations to one another worldwide. Singapore enjoys its role as a hi-tech testing ground. A very successful experiment in IT-based education is taking Singapore out of the rigid traditional school of chalk and board and into an exciting super highway for multimedia schooling. Beginning as a student-teacher workbench (STW) project in the mid-1990s, snowballing innovative applications of the key technology of interactive multimedia allow students and teachers access to global networks of communication, as well as local and international computer databases, containing multimedia learning materials for reference and presentation. Students and teachers discuss and work together on projects via electronic learning networks that link schools and homes. Increasing use of interactive multimedia technology in schools helps to spawn a new industry related to software and hardware for initial support of STW and now increasingly for export. Educators are taking the lead and showing the way in helping Singaporeans to live, learn and work comfortably in an "intelligent island". Singapore is becoming a learning nation, a society of learning organizations with a population of learning individuals.

## Changing structure of school developmental planning

This scenario of Singapore in the early twenty-first century could well be an excerpt from an electronic newsmagazine of the year 2010. A Singapore student could well be reading it on the Internet. Although it exists now only in the mind, like all scenarios of the future, it is believable. It is believed to be highly probable in Singapore, judging from recent articles in newspapers and newsmagazines. Further, the Singapore government has been investing heavily in line with its information technology strategy[1]. This strategy is, in part, about rapid development of information technology that will affect the future of schooling. There are other possible external influences[2,3] on schools too. How could school leaders be helped to plan for the future?

School leadership is about preparing students for living and working in a future knowledge-based society and preparing teachers for new ways of teaching and learning. Education is about helping young people to achieve their greatest potential for work and life in the foreseeable future.

Holcomb[4, p. 41] advocated a similar thrust for schools in the USA:

> We must prepare children in our schools to face their future. We must prepare them to cope, at an adult level, in order for them to assume their responsibilities in the year 2020 and beyond.

The offer of further decentralization of UK school management could suggest that "schools will have to decide individually their strategic direction in the educational marketplace, identify the type of school that they intend to become and plan the range of services that they intend to provide for their various client groups"[5, p. 7]. Planning is always future oriented and change related[6]. Coupled with the expectation for rapid change in Singaporean society, school developmental planning must include looking at future scenarios of the external environment of schools. Such future scenarios could help school leaders to conjure in their minds "a vision of a future for all of their children"[7, p. 14] or "some sort of corporate vision of the future"[8, p. 174]. The current structure of planning for school development or "school development planning" must therefore give way to a new one that incorporates environment scanning as a way of obtaining input data for future planning. Schools can no longer look only at what has been done by evaluating the extent to which past results deviate from objectives. Schools must look also at the environment to uncover salient changing patterns that could serve as additional input into the planning process, especially when schools are becoming self-managing[9].

Changing patterns in the external environment of schools include what is changing and its direction of change over time into the future. These changing patterns drive evolving school visions. School developmental planning refers to a continuous cycle in that the previous plan is being fed into current planning for a new plan, which in turn will be fed into subsequent planning for yet another plan. A rapidly changing external environment must be harnessed by planning that develops schools. School leaders in Singapore therefore need to learn a futuring process for observing such salient changing patterns in the environment, especially when they have increasingly greater autonomy in school management[10]. Before that, they must have an awareness of a futures orientation that could help them to help their students to prepare for a foreseeable future world of work and life. How could they be helped to acquire this awareness?

# New initiatives: scanning environment and futuring

The National Institute of Education of the Nanyang Technological University is taking the lead in helping school leaders to develop the awareness of the need for futuring in planning and to learn a futuring process for studying an area of concern related to schooling in the future. This new initiative aims at helping school leaders to rethink their planning premisses[11] by including assumptions about the future. School heads of departments attending a management training programme at the Institute are divided into groups for studying the future with the intention of working out a proactive plan for their school departments. This programme is called the Further Professional Diploma in Education programme, by which all heads of departments in Singapore schools receive their management training. In outline, this futuring process has five steps:

1 brainstorming rounds;
2 delphi survey;
3 futures wheel mapping;
4 cross-impact matrix analysis; and
5 scenario writing.

These steps are quite standard in futures research. The delphi survey, in particular, "has a degree of scientific respectability and acceptance"[11, p. 186]. Details of this process can be found in Leong[12] and the five steps described in this paper are highlighted here. In the first step, the heads of departments serving as researchers carry out a brainstorming round for a list of trends that could affect the future of education in a given area of concern. The second step of the delphi survey in the futuring process is to submit a list of trends generated through brainstorming rounds for scrutiny and feedback by a panel of people with knowledge and stake in the area of concern. The delphi panel members are asked to choose four most probable trends and to rank them. The third step of the futuring process consists of mapping a futures wheel, which links likely consequences of a trend identified by the delphi panel. Each likely consequence generated becomes the causal event for more likely consequences. Step four, cross-impact matrix analysis, consists of determining possible interactions among the listed likely consequences mapped in the futures wheel in a systematic manner

In step five of scenario writing, the futures wheel and the cross-impact matrix are used as the bases for suggesting an imaginative scenario of the future. This scenario, which is based on assumptions about the future collected by the futuring process, drives the proactive plans to be prepared by the heads of departments for their schools. A futuring

process that includes a delphi survey can serve as a workable way of environmental scanning for busy school leaders in Singapore. Schools should invite members of the community to participate in school developmental planning as their delphi panel members. These members of the community can give school leaders grounded planning premisses that connect what is done in their schools with the community and the world of work. What can school leaders learn from delphi studies?

## Salient changing patterns in Singapore: results from three delphi studies

To end this article, 12 probable assumptions about education for living in Singapore towards the twenty-first century are highlighted for readers to appreciate the kinds of data obtainable from the above futuring process for school developmental planning. These assumptions were collected by two groups of school heads of departments in 1990 and another group in 1992. Altogether there were 124 heads of departments involved. Each group had the help of one delphi panel, each of which selected four most probable trends. The three delphi panels comprised a total of 85 people who were invited from different walks of life in Singapore. Each is therefore able to give a view of the future from a vantage point related to a particular walk of life. The following 12 probable assumptions about education for living in Singapore towards the twenty-first century are the results of collaborative effort of a grand total of 209 people inside and outside the Further Professional Diploma in Education programme in the beginning of the 1990s. They are grouped under three headings, namely:
1   teaching and learning;
2   management and organization; and
3   schooling and the environment.

A paragraph for amplification is given with each assumption. Comments made by delphi panel members and major premisses used by heads of departments for constructing their scenarios of the future serve as the bases for writing these paragraphs to amplify the 12 probable assumptions:

## Teaching and learning

There will be a higher level of participation in staff training and staff development programmes by teachers. Teachers will have to keep abreast with new technologies and trends in education. They will have to be aware of rapid changes and development in

knowledge and theories as well as societal shifts. These teachers will be better able to help students to adapt and change themselves to face future challenges. Greater and more comprehensive development of human resources will be instituted. Schools will use more consultants. Wider and more flexible curricula will be available for students. Greater development of resources will be directed towards information technology for the support of learning and teaching. With increasing use of interactive multimedia systems, there will be concomitant shift of production of teaching materials to schools. More sharing sessions for teachers will be organized within and among schools. More sophisticated software will be available for school administration to manage an emerging electronic network for teaching and learning. The increasing cost of schooling will encourage schools to seek more financial help from other organizations.

*Exploratory teaching and learning techniques will be used more extensively in schools.* Exploratory teaching and learning methods will foster a closer link between the school and the world of work. Opportunity for self-directed exploration will be increased with the use of interactive multimedia systems and will give students a more meaningful educational experience. This method will be considered effective for facilitating better comprehension of the school-world linkage. Meaningful educational experience will increase the retention rate of knowledge among students.

*The computer will be widely used in teaching, learning and evaluating processes.* Computers will be widely used in the year 2000 in Singapore. Computers will make teaching more interesting, exciting and interactive. With the widespread introduction of multimedia computers into schools and the piloting of the STW project in Singapore, the use of computers will gain increasing popularity. With increasing participation of teachers in training and development programmes, they will be well equipped to handle the change. All students will be computer literate. Pupils will gain confidence in the use of the new technology and innovations. Computers will become an integral part of education because of careful and innovative school developmental planning. Schools will prepare a new generation of Singaporeans for the emerging hi-tech society. There will be an increase in demand for computer hardware and software as Singaporeans become better adapted to new applications of computer to work and daily life.

*The curriculum will be further developed to provide for a more rounded education (e.g. field trips, outdoor lessons).* Much knowledge will

be acquired by students through practical experience in field trips and outdoor lessons. These group activities will increase students' awareness of the real world beyond virtual reality and will provide for their need for group interaction. A balanced and all-round education will be emphasized as the aim of the school curriculum and as a working definition of the concept of "quality" education.

*There will be greater emphasis on problem-solving, critical thinking and decision-making skills in curriculum.* Quality education will be provided for students to cope with the demands of a constantly changing society. Students will learn to cope with real life everyday problems. Students will learn thinking skills to encourage intelligent behaviour. Development of the mind will have an impact on various spheres of a knowledge-based society. Children, like their teachers, will learn to adopt a futures orientation in their thinking. Learning to learn will help students to carry on learning throughout their lifespan. Related skills will enable and equip pupils to locate and process knowledge readily for success in their adult working lives. Singaporeans will learn to be creative, competitive and pragmatic, in order to keep the economy internationally competitive. Emphasis on thinking skills will require constant upgrading of teachers, and exploratory teaching methods and learning techniques will be used more frequently in teaching and learning.

## Management and organization

*Greater autonomy will be given to schools in areas such as recruitment of teachers, selection of subjects, curriculum time and examinations to cater to the individual school requirement.* Greater autonomy in school management will allow more creativity and initiative in education. It will allow each school to develop in a competitive environment to respond more readily to the needs of its environment. It will also allow for a more confident and imaginative group of school leaders to develop. Greater autonomy in school management will provide the opportunity for school leaders to influence the external environment of the school in order to meet the needs of children more meaningfully. It will localize accountability in school management and will empower principals and "school boards" for appropriate action. Parents will have a greater say in the making of school policies. The business sector will participate more actively in schools for a better qualified population.

*Streaming will be more flexible to meet the special needs of individual students.* This flexibility will be possible with single-session schools and smaller class size. Streaming of students by ability group will be more flexible to cater for late developers. Extensive use of multimedia interactive systems will help towards flexible arrangements for teaching and learning. With flexible streaming, special individual needs of students will be met. Teachers will experience greater stress and dynamic school administrators will empower them to help students to achieve better performance. The cost of education will increase, with greater use of technology. Fewer students will drop out of school. Schools will compete with other sectors for highly skilled personnel and schemes will be in place for retaining teachers in schools.

*All schools will function as full-day schools.* Singapore has been trying out different variations of a single session school. At present, most schools are operating in double sessions – one set of students and teachers uses the school building in the morning and another set uses the same facilities in the afternoon. Both sessions of a school are managed by the same team comprising a principal, a vice-principal and five to eight heads of departments. Whenever possible, principals tend to favour the use of school facilities by students and teachers for the whole day. Variants of the single session school will be implemented, whenever possible, to facilitate a more rounded education. The desire for "quality" education will push for more variants of full-day school. Children will spend their time more meaningfully in schools.

*Formal education in the primary school will begin at the age of five years.* At present, students begin attending primary school at the age of six, although most of them have attended kindergarten classes before beginning primary school work. In the future, students will begin formal primary school work at the age of five in order to lay a stronger foundation for the acquisition of languages and for early development of creative and analytical thinking. Much of interactive multimedia software is suitable for children's use in their formative years.

*Schools will be equipped with more advanced high technology facilities, e.g., special resource rooms with the latest audio-visual equipment.* Hi-tech facilities will be the basic requirement for future schools. They will aid the learning process and will expedite information processing for students. Singapore is already moving in this trend to keep up with the advancement in information technology. The desire to gain as much information and learning in the shortest time possible will demand greater use of interactive multimedia equipment. Schools will need to help to

prepare students for the future hi-tech workplace, so classroom technology will reflect automation in the workplace. With more training and development courses for teachers and more intensive use of computer technology in schools, more specialized technology will be introduced into the schools. More emphasis on doing and experimenting will increase the opportunities for even more innovative applications of technology in schools. The teachers' role will shift more from the instructor to the facilitator of learning, with more extensive use of simulations in education.

## Schooling and the environment

*There will be greater communication and co-operation between schools and industries in the areas of career guidance, industrial training and the dissemination of information on career opportunities.* Singapore will continue to value its scarce human resources. Students will be helped to achieve their greatest potential to match the needs of the nation. More interaction and communication with industries will give students a better understanding of career opportunities. Science and technology will receive greater emphasis and funding in education.

*There will be more emphasis on healthy lifestyle to cope with problems common to developed nations, e.g. drug abuse, stress, obesity, etc.* Singapore will have to ensure good health for Singaporeans in the face of rising health costs, especially in the face of scarce, highly skilled human resources. The garden city will be further transformed to create a healthy, living environment for minimizing the harmful effect of increasing pressures and stress of work and living. There will be increasing upward social mobility towards middle- and upper middle-class. There will be greater demand for more gracious living. Schools will conduct programmes for helping the next generation to cope better with the pressures and burden of a "greying" population. These programmes will aim at helping people to maintain a healthy lifestyle for living in a prosperous country and for improving the quality of life. Efforts will be made to reduce exploitation and to improve human relationships among the people.

The above 12-point framework could serve as a tentative set of planning premisses for school developmental planning, but it should only serve as that expected future in which the school plan "proposes to do" [13, p. 23]. Plans should be flexible "so that the school looks ahead but remains responsive to future changes in circumstances" [14, p. 10]. A set of

planning premisses gives a scenario of a possible future which could change over time, as the school organization executes the plan. Changing premisses are continuously revised descriptions of changing patterns in the external environment of schools that drive evolving school visions. This does not mean that a blurred vision should suffice. Visions should be quite detailed, "in order to provide real guidance in future problem solving" [3, p. 41], especially when the external environment of schools is changing rapidly. A blurred vision could not be shared by school leaders and their colleagues meaningfully for collective thinking and future group action. The 12-point framework described above gives details, albeit tentative, that school leaders and their colleagues could share meaningfully as a guide for the ongoing collective formulation of school objectives as well as decision on learning and teaching strategies.

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