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Background Paper On Singapore

By

Lian Fook Shin
Physical Features

The main island of the Republic of Singapore is 41.8 km long from West to East, and 22.9 km wide from North to South. The area (1981 figures) is 570.409 km. The total land area, including that of the 50 smaller islands and reefs is 620.5 sq km. Although a few of the larger islands are earmarked for tourist and industrial development, many of the smaller ones are of little importance and they remain in their natural state and are sparsely populated. The majority of a population of approximately 2.6 million live and work on the main island of Singapore.

Education System

The priority objective of our educational system is to provide qualitative education with emphasis on flexibility so as to enable our children develop their potential to the fullest.

Primary Schooling

In general, primary school pupils attend a six-year schooling period if they pass the school-based examinations at the end of Primary Three. For those who fail, they are streamed to an extended course which requires two additional years of study. A Primary School Leaving Examination (PSLE) is set for all primary school pupils at the end of their six to eight years' course. The pupils' examination results together with the schools' assessment of them will determine the type of bilingual schools they attend in the secondary school sector.

Secondary and Post-Secondary Schooling

Our secondary education covers a period of either four or five years, depending on the pupils' PSLE results. At the end of this period, the pupils sit for the GCE 'O' Level examinations conducted by the Ministry of Education in association with the University of Cambridge Local Examinations Syndicate.

Successful candidates with the appropriate combination of subjects in the 'O' Level examinations will then be channelled to the two-year junior colleges or the three-year post-secondary course which leads to the GCE 'A' Level examinations which are also conducted by the Ministry of Education and the University of Cambridge Local Examinations Syndicate. A fairly good percentage
of pupils will opt for the Singapore or Ngee Ann Polytechnic instead.

**Technical Education**

The two institutions responsible for providing technical education at the three-year Diploma level are the Singapore Polytechnic and the Ngee Ann Polytechnic. The two polytechnics took on an enrolment of 17,379 (full-time courses) for the academic year 1986/87.

In addition to full-time students, there is also a large part-time student body of more than 5,000 in 1986/87 for courses spreading over five years. Both courses are meant for GCE 'O' and 'A' Level students.

With the completion of the comprehensive programme to expand technical education, it is envisaged that the enrolment in the two institutions will escalate further by 1990.

**Vocational and Industrial Training (VITB)**

The VITB conducts institutional training for school leavers as well as offers part-time continuing education and training programmes for workers. Training provided is essentially in the development of industrial, service and applied arts skills leading to the award of the Diploma in Applied Arts, Industrial Technician Certificate, the National Trade Certificate and other certificates of competency and pre-vocational training. Entry qualifications vary according to course requirements, but GCE 'O' Level is generally required. More than 20,000 students attended the VITB courses during the 1986/87 session.

**University Education**

The National University of Singapore (NUS) was established when the University of Singapore and Nanyang University merged on 8 August 1980.

Apart from the eight faculties - Architecture and Building, Accountancy and Business Administration, Engineering, Science, Law, Arts and Social Sciences, Dentistry and Medicine, there are also three postgraduate schools for management, dental and medical studies. The total enrolment in the University, including postgraduate students, numbered 15,000+ in the 1986/87.

Amongst the non-faculty departments are the English Language Proficiency Unit, the Chinese Language and Research Centre and the Department of Extramural Studies.

To meet the increasing demands for practice-oriented engineers, the Nanyang Technological Institute (NTI) was established on 8 August
The School of Civil and Structural Engineering, the School of Electrical and Electronic Engineering and the School of Mechanical and Production Engineering provide specialized training with a broad discipline and are all directly related to the needs of the industry.

All engineering students attend a common first year course at the NUS Faculty of Engineering. After the first year, students may then opt to complete the remaining three years of study either at NUS or NTI. The student population in NTI for the academic year 1986/87 was 2,192.

Although the NTI graduates receive the Bachelor of Engineering degree awarded by NUS, the institute (NTI) is administratively independent having its own council and other authority.

Some Aspects of Media Packaging and Utilization in Singapore

Singapore does not have an educational infrastructure for distance education. As the preceding paragraphs would indicate, there is no necessity for it because of our close proximity and our education system which is fully geared for a more formal approach. The most important factor is that there is minimal wastage of qualified school-leavers as nearly everyone is absorb into our tertiary, technical and vocational institutions. The educational authority is bent on developing a balanced and educated manpower for our industrial and other national priorities. The preferred approach is through formal education enriched by a variety of educational facilities and materials.

There are of course attempts to package media to help enhance teaching and learning but they are usually designed more for the teacher or instructor and not so much for self-paced independent learning. Two such projects are based in the Curriculum Institute of Singapore (CDIS) and the Vocational and Industrial Training Board (VITB).

CDIS

The Singapore Educational Television Service (ETV) of the Ministry of Education was an Asian pioneer in transmitting direct teaching TV programmes to schools in January 1967. With the merger of the Service to the CDIS in June 1980, there was less emphasis on open broadcast and the trend was to plan, design and produce curriculum packages for use by the teachers in the schools. Included in the packages is a variety of teaching and learning materials such as overhead projection transparencies, photographs, games, board games, audiotapes, videotapes, charts, workcards, worksheets etc for use by the teachers or students at the appropriate time. The media mix differs according to the particular requirements of the package. A few television programmes on selected topics are also broadcast, especially when they have wide general interest. These curriculum packages usually support specially designed and written textbooks which are published by the Institute.
VITB

The VITB is another institution which introduced specially produced media packages to support its instructional modules in the Basic Education in Skills Training (BEST) programme. Students opting for the BEST programme are full-time employees in the firms, industries and other organisations. They attend classes in assigned schools, hotels and other locations outside the VITB campus nearest to their workplace. The instructors are mostly non-teachers drawn from the commercial and industrial sectors. After a period of orientation in the use of the media packages produced by VITB, these instructors become competent in conducting off-campus instruction with a success rate of about 90%. The media mix in these packages is essentially a short videotape coupled with text.

Private Educational and Training Institutions

The use of printed course units is still very much in vogue in the private educational and training institutions like the Stamford College and Federal Publications Home Study - ATT Education Centre. The main instructional approach however, is the in-house attendance or seminars in the evenings by those desiring to take an University of London external degree in law, science, economics and divinity. The Home Study UK-based courses for the Institutes of Administration and Management, Marketing, Business are also print-oriented. They are mostly of the traditional correspondence course in concept and technique.

Recently however, Wolsey Hall, a well-established international correspondence institution in Oxford, England introduced a distance learning course for the Warwick University Master of Business Administration external degree through its local agents in Singapore. The learning materials in the course units are designed and packaged according to the current practice of distance education. Occasional seminars are conducted in Singapore so as to provide depth and interaction in the process.

There are other distance education courses being marketed in Singapore and many of these are from the Australian tertiary institutions. These courses are mostly print-oriented and based on the Open University concept but without the broadcast component.

Future Trends: Non-Personal Teaching Facilities in Singapore

Given the heavy investment by the Government in the formal education and training sector in recent years, it is unlikely that there will be any significant effort to adopt the distance education mode of instruction and learning in Singapore. In many situations, the distance education approach is simply not as effective as the face-to-face interactive technique nor is it necessary or applicable in the small island Republic of Singapore. Moreover, there is really no backlog of qualified GCE 'O' and 'A' level students who are unable to find a place in the tertiary, teacher education, technical or post-secondary institutions.
The traditional face-to-face technique of communication is not always the most cost-effective means to instruct a large group of learners. Although the media units and educational technology centers in the respective Singapore institutions do innovate alternative strategies with a variety of media, the likely trend however is towards the intensive use of information technology in the future. This is inevitable because of the Government’s emphasis and financial investment in making Singapore a highly computer-intensive country.

Information technology has been successfully tested and applied in the fields of educational, scientific and medical research, industrial development, manufacturing, business and management, communications information storage and retrieval but relatively new to instruction and management of instruction. With the rapid development of computer-intensive campuses, several institutions have ventured to extend the use of informational technology for direct instruction and independent learning.

The computer-aided design and computer-aided manufacturing (CAD/CAM) centers in both the NUS and NTI campuses as well as the Polytechnics are part of the overall plan to provide students with electronic facilities for independent study and research in CAD/CAM technology. For the more formal instructional approach, the Ministry of Education and also the Polytechnics and the Ministry of Defence have started a variety of projects in teaching specific subjects or topics using the computer-assisted instruction or interactive video techniques. These instructional activities are mostly non-personal and many of the course units are suitable for independent study. However, the facilities are confined to specific locations where the computing facilities are housed and access is therefore somewhat limited.

Amongst several new projects for establishing comprehensive computing resources in the institutions, the National University’s scheme is likely to be of great interest to the innovative faculty staff in the future. The University’s computing and communications resource project is clearly summarised in the outline sketch following:
Administration Network
Office Automation

The current phase of development concerns the setting up of an administrative network for the Vice-Chancellor, Deputy Vice-Chancellor, the Faculty Deans, Heads of Teaching Departments, Director of Schools, Central Services Departmental Heads, and their Secretaries. The mainframe computer network will provide for instant electronic mailing and communication between the parties as well as allow direct access to database and information systems for operation and decision support. There is already a comprehensive library network in place and this system now has access to international library database.

Departmental Network

The next phase provides for the academic departments as the computer is now proving to be indispensable to excellence in teaching and research. In this phase, the academic departments have access to the mainframe computer, and where relevant, also install mini-computer systems to meet their specialized laboratory, teaching and research needs. There will be a proliferation of micro-computer/workstations throughout the campus ie the departmental areas, central and branch libraries and even the students’ Halls of Residence for the individual student to access the database systems, graphics packages and computer-based course units on an open basis. The easy access should encourage students to do more informal and independent learning with minimal intervention by the lecturers.

Additional facilities will eventually be available for both staff and students to dial up using telephones connected to home micro-computers with modems for access to the computing and communications facilities in the University from locations outside the campus. It is envisaged that the facility will allow students to submit their assignments and projects for assessment by the teaching staff through the campus computing system.

Cable Television (Video) Network (CATV)

The last phase will see the introduction of CATV into the computer network which is essentially a database and graphics system. With the incorporation of video, the broadband network will be able to transmit art, photographic or video images captured by the videocamera or electronic scanner to the students at the workstations. This facility will add a new dimension in designing computer-based learning course units for independent study in the future.

The CATV component which has a two-way facility will provide a means of mass communication with interactive capability within the campus. Local as well as international lectures and symposiums on specialised topics may be transmitted to various campus locations, including the lecture theatres and students workstations, via the network simultaneously. The University two-way CATV facility supported by a Telecom-link will allow a means for the audience to interact with the lecturers and specialists.
from remote locations within the confines of the island republic or the world at large.

As always, new technology hardware is many steps ahead of the development of appropriate software and their effective application in education and instruction. We hope the research and experiments now conducted at the University will eventually transform our current practices and inject new teaching and learning approaches into our education system in the near future.

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