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## RESEARCH AND DEVELOPMENT IN SINGAPORE

### Preamble

As in everything else during the Development Decade of the 1960s, Singapore's progress in the expansion of her educational system proceeded with a pace almost unmatched elsewhere.

Certain events during the decade served to maintain and enhance a momentum in development which was begun soon after the last World War. It was a decade which could be named the Struggle for Survival. At its beginning were the threats posed by Communism to possess the minds and hearts of youth. Education could no longer be left to private individual or group enterprise. Government-sponsored schools had, therefore, to be multiplied. Thus 101 schools were built over the ten-year period between 1960 to 1970, at an average rate of almost one a month. At the same time teachers were rapidly trained to man these schools.

There were, too, the momentous occasion when Singapore became a regional isolate, cast out of the Malaysian union. As a "loner" she planned for her own survival in a diversification of activities through industrialization - in manufacturing enterprises, in shipbuilding and in technological pursuits requiring extensive knowledge and use of instrumentation. It was obvious even then, that her role as regional middleman in trade would increasingly decline.

To support her new activities, she needed manpower of the right calibre. Thus, the latter half of the decade were years spent in establishing and strengthening technical education at the secondary level. At tertiary institutions, particularly the University of Singapore, more professional disciplines such as business management courses, applied science courses, accountancy, architecture, to name a few, were introduced. The Polytechnic and Ngee Ann Technical College both underwent reorganization in course structures and content in order to make them more responsive to the needs for middle-level manpower.

Finally, the pull-out of the British forces from their Singapore military base made it very clear that the people in Singapore could continue to expect surprises in so far as livelihood was concerned. Apart from the bewildering pace which technological progress was making in the world, there were the added consequences of frequent changes on the local scene. Again it seemed clear that education had a big part to play in producing individuals who were sufficiently resilient, mentally and emotionally, to cope with the changing circumstances and ride the storms which might from time to time beset them.

By the end of the 1960s, the fundamental quantitative problems of education had, to a large extent, been overcome. It remained a task for

the 1970s to make good the qualitative aims of education brought so clearly into focus by the educational changes of the 1960s.

### Research and development - The task of the 1970s

Up to 1970, research activity in education was institution-based and generally unco-ordinated. The various centres which were in one way or another conducting educational research were the following:

#### The Research and Statistics Unit of the Ministry of Education.

This was set up in mid-1969, but was involved mainly in the gathering, processing and analysis of routine statistics, which were published twice a year in bulletin form for official use and internal circulation only. The scope of its activities was enlarged with the appointment of a Director of Research in late 1969. It was clearly briefed by the Minister to be "concerned with such aspects of work as the continuous appraisal of organization and practice in the light of new goals and objectives; the evaluation of methods and curricular content, the examination of the many problems of teaching and learning, and the indication of new directions for quality improvement".

Since that time the Research and Statistics Unit has been enlarged to become a Division, having under it three units: research, statistics, guidance and counselling.

#### The Research Unit of the Teachers Training College

This was set up in 1965 largely through the initiative of an individual member of staff. Team studies were made on the motivation of pre-service, trainee teachers and the reading habits and interests of school children. Other studies were depending on the interests of individual members of staff. On the whole, the studies were, methodologically speaking, poorly conceived.

With the appointment of a new principal in mid-1971, an extensive reorganization in curriculum and administrative procedures was introduced. At about the same time, the University of Singapore declared its intention to close down its School of Education, a department which, according to the University, was not fulfilling its role in giving leadership in educational thinking and development. Since the Department of Education at Nanyang University had also been weighed in the balance and declared wanting by the Wang Gung Wu Committee in 1968, the Teachers College became, at the beginning of this year, the only institution offering teacher education at all levels and types. New graduate and graduate professional courses are conducted here and T.T.C. also prepares students for the graduate degrees of the University. The

principal sits as a member of the Senate and of the Boards of Postgraduate Studies and of Examinations.

In the light of these changes, the research unit at the T.T.C. no longer exists as such. The new principal, who is also Director of Research at the Ministry, has planned for the setting up of a Department of Postgraduate Studies whose responsibility will be the offering of research training to graduate teachers with teaching experience and academic potential. These will form, hopefully, a pool of able researchers knowledgeable in the methods and discipline of scholarly research. Action research, concerned with seeking information and feed-back on the curriculum, the students, the methods, etc. of the College will be made the responsibility of a specific unit based in the administrative division of the College. This, however, does not preclude postgraduate students from undertaking studies related to the action-research programme of the College.

The Sociology Department of the University of Singapore from time to time assigns to its students research studies which carry educational implications. More recently, there has been co-ordination of an informal and personal nature in the planning of projects which are of interest to both the Research Division of the Ministry and this Department. From time to time, other Departments of the University also turn to education. Generally speaking, the University tends to select areas for study according to its own interests. However, overlap in work has been avoided through a sharing of information.

Lastly, there is the Economic Research Unit, established in 1965 as a research institution of the University of Singapore. The aim of the Centre is to "undertake systematic and sustained applied, policy-oriented research into the economic and social problems of Singapore, and their interaction with the goals of developing nations of surrounding countries in the region".

Though the emphasis on research at this institution is not mainly educational in nature, nevertheless its studies, particularly in the areas of urban development and manpower resource development, are closely associated with those of the Research Division of the Ministry, whose main concern is with the social aspects of urban development and the part that education can play in these circumstances. The Ministry's Division also concerns itself with the evaluation of courses which purport to offer training in specific skills and vocations.

In the interests of co-ordination, a Council of Research was set up in 1971, mainly to advise the E.R.U. in the planning of its research programmes. But this Council has, among its membership, research directors from research units in the various Ministries of the Government. Its formation, then, was a great step forward in an attempt to relate and communicate

information on what on-going research there is in the various research institutions of Singapore.

### The physical structure of various research units

By and large, there is striking similarity in the physical structure. Table 1 gives the structure of the Research Division of the Ministry of Education, while Table 2 gives the structure of the Economic Research Centre of the University of Singapore.

### Research and development centres

From the three Tables, it may be perceived that the main Research and Development Centre for education in general is based at the Ministry's Research Division; that the T.T.C's Administration Unit will be chiefly responsible for research and development in teacher education, while the ERU (shown in Table 1) is mainly involved in economic and manpower research and development.

### Strategy for research and development

This may be described in the following steps usually taken:

1. Select with care persons known for initiative and ideas and are proven as agents of positive change;
2. Map out together with these selected persons the plan for development and research;
3. Assign to each his/her role in the work;
4. Support and co-ordinate all efforts at top-level committee or board;
5. Gain feed-back through evaluation and maintain communication with grass roots, implementation personnel.
6. Support the general effort with specific workshops, seminars and week-end group-disseminations, "multiplier", spearheading advance. This last activity is assigned to the best persons from trained groups so that diffusion may occur soundly in the right direction and with satisfactory speed.

In Singapore the maxim is, "the greater the involvement for all, the better the success".

## Difficulties

1. Finance. This has recently promised to be less of a problem. The three Ministers, Education, Finance and Development, have agreed in principle to the allocation of 1% of the annual education budget to research and development.

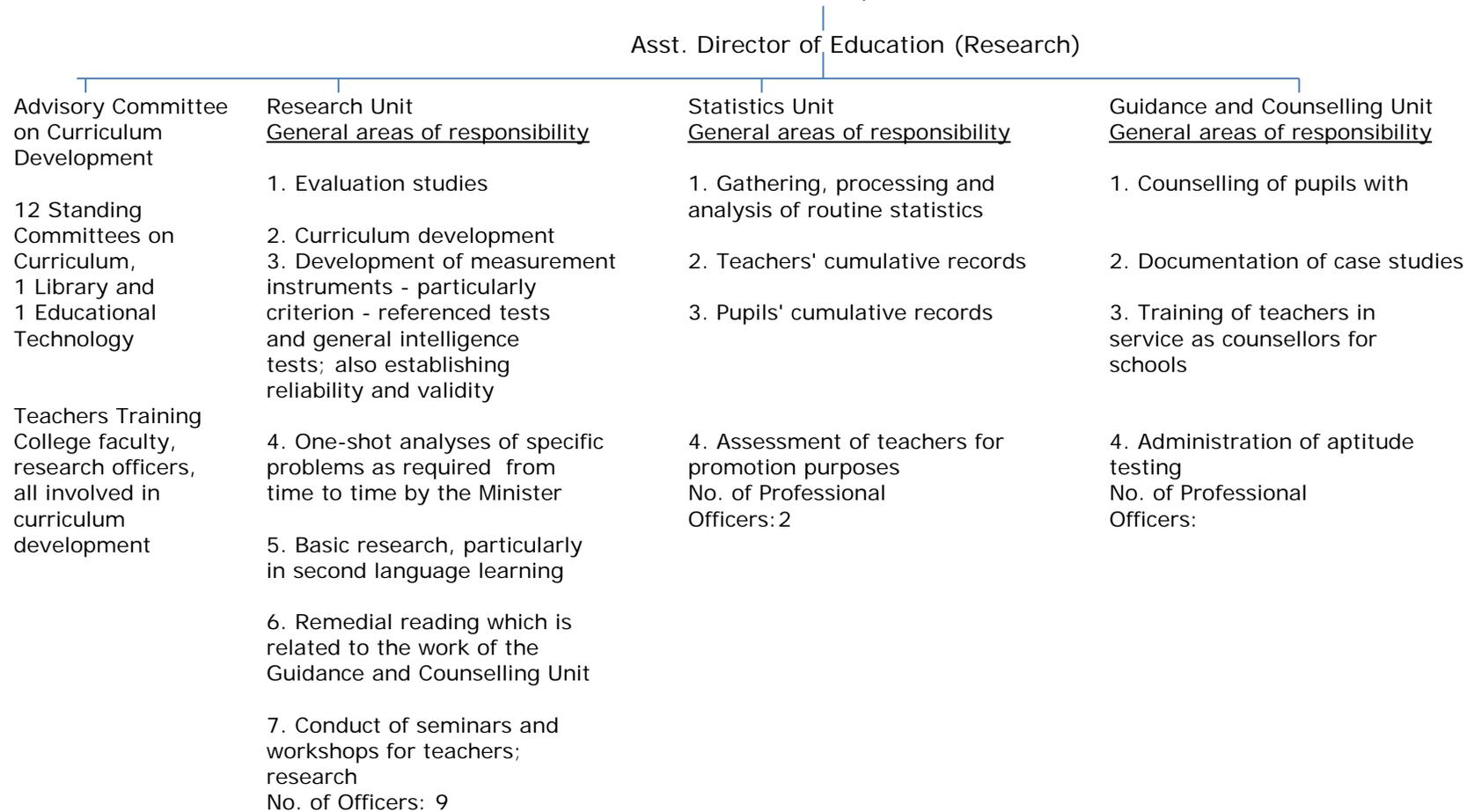
2. Personnel. This is a moot problem still to be solved. Training schemes have been introduced to upgrade the quality of staff, notably with the assistance of ODA (Britain) and the Asia Foundation. However, regional workshops of the nature of the recent SOLEP Conference would go a long way to solving this problem.

3. Evaluation. Change agents are valuable persons, but by their very desire to advance change, they refuse to brook any failure. Our difficulty as honest researchers is enhanced since sampling and treatments are likely to be interfered with. We have to change direction in order to turn this weakness of the change agents into a positive force.

4. Materials. This can never be produced fast enough especially if validation is an aim. We have managed, however, to apply the same general strategy to assign tasks to specifically selected and creative persons.

5. Finally, there is the problem of integration. While it has been possible for the Director of Research to hold important positions concurrently and thus have a bird's eye-view of all that is happening, communication at ground level is still a problem due to the application of traditional bureaucratic methods of information dissemination. It is intended to improve the Ministry's bulletin, the "Educator", by making it the specific channel for information and exchange.

Table 1. Research Division of the Ministry of Education  
Organization Chart  
Director of Research  
(Administration and Supervision of Research)



Note: While the units are separate for purposes of administration, all officers co-ordinate and ---- assist one another in the programmes of the Division. For example, while the curriculum committees develop syllabuses and guidelines, inspectors and research officers together with selected creative teachers and principals conduct workshops for their colleagues who need guidelines in handling the new curriculum. As another example, the G and C unit administers the aptitude tests while officers of the R. U. look after item analyses and validation exercises.

Table 2. Economic Research Centre  
Organization Chart -  
(Research Staff)

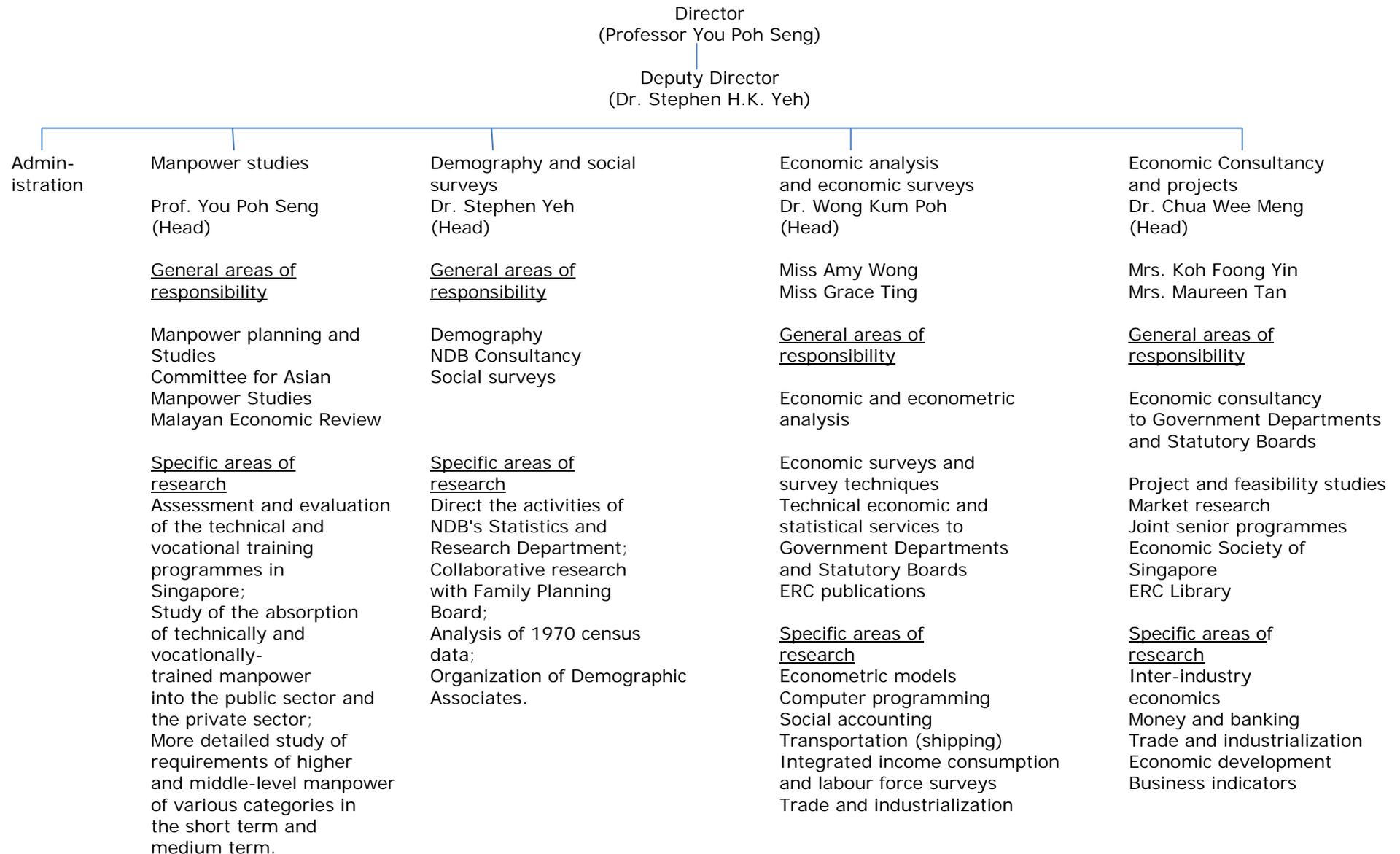
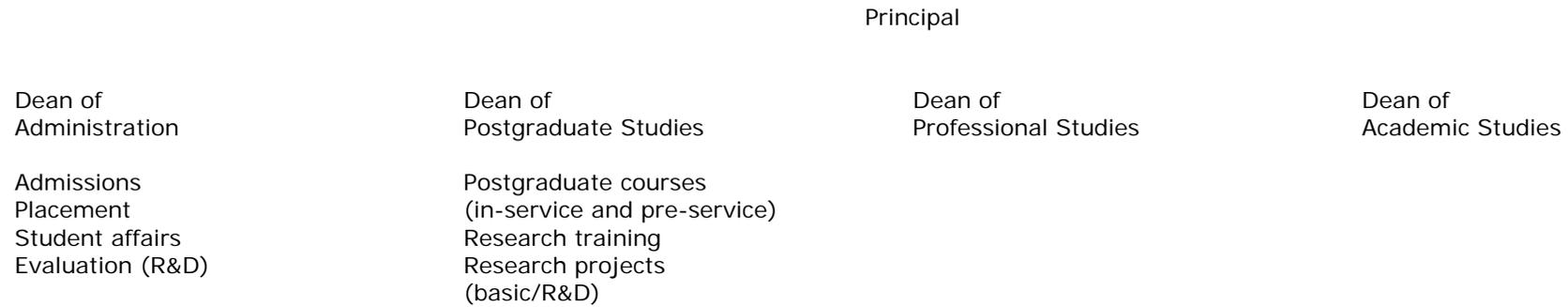


Table 3 Organization Chart of the Teachers Training College  
(still to be finalized)



\* Note: 1. This is still a chart of things to come. The so-called research unit which served neither the research and development nor the "basic" research purpose has been folded up.

2. So far the persons for the new set-up have not yet been selected.