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NATIONAL CASE STUDY OF
TEACHER EDUCATION IN SINGAPORE

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1 Introduction

1.1 At the 1984 ICET World Assembly the writer (Sim, 1984) presented his Institute's plans and initial efforts in identifying and strengthening what were labelled as "missing links" in teacher education, at least in Singapore where these missing links have generally been widely acknowledged but seldom seriously addressed beyond the rhetoric of wishful thinking. In subsequent presentations at ICET World Assemblies, attempts were made to elaborate on each of the three missing links, namely theory-practice linkages (Sim, 1985), preservice-inservice linkages (Sim, 1987) and research-training linkages (Sim, 1988). The associated Symbiotic, Synchronous and Synergistic strategies, respectively, were seen as parts of the overall Systemic strategy that was being employed in the progressive reforms taking place in teacher education in Singapore.

1.2 Taken together, the four papers probably constitute a veritable Case Study of Teacher Education in Singapore as envisaged for the UNESCO Interregional Seminar. However, apart from space constraints and the desirability of portraying the latest situation, there is need to balance the earlier emphasis on the professional dimension with some discussion of pertinent aspects of the contextual dimension.

1.3 To set the stage for consideration of contextual aspects, it is perhaps useful to note that there are several features regarding teacher education in Singapore that are probably unique in comparison with most, if not all, other countries, such as the following:-

- (a) The Institute of Education (IE) is the only teacher education institution in Singapore which is responsible for a whole range of programmes and courses that are "multi-stage" covering a variety of full-time and part-time pre-service programmes as well as in-service courses that are classified as "uplifting", "updating" and "upgrading", including programmes leading to post-graduate degrees , "multi-level" ranging

from pre-primary to even tertiary teacher education, on the one hand, and those directed at classroom teachers to those for school administrators, on the other hand -- and "multi-disciplinary" -- covering a variety of educational studies (e.g. testing, guidance and counselling) and curriculum studies (e.g. teaching of music, moral education and technical studies), including courses for special education teachers as well as instructors in other sectors.

(b) IE was established in 1973 through the amalgamation of the Teachers' Training College, which was part of the Ministry of Education and responsible for training of non-graduate teachers, the School of Education at the then University of Singapore which was concerned with training of graduate teachers and conducting research in education, and the Research Unit of the Ministry of Education. Thus, besides the "training of teachers in various fields and at all levels", IE was also charged with the "promotion of research in education". However, even though IE was also supposed to confer degrees and diplomas, the award of postgraduate degrees and diplomas has continued to be the prerogative of the National University of Singapore, even though it does not have a Faculty of Education and the Director of IE sits on its Senate to advise the University on matters pertaining to the admission and examination of students in the Diploma in Education and Masters of Education, as well as Doctor of Philosophy, programmes.

(c) Likewise, although IE is a statutory board, it continues to be perceived as the training arm of the Ministry of Education. As a matter of fact, the Director of IE sits on the Ministerial Committee, which is the central policy-making body of the Ministry of Education, chaired by the Minister himself, and is expected to respond to changes in educational policies and programmes by making corresponding qualitative and quantitative changes in teacher training and re-training. Projections of pre-service teacher requirements are made annually and IE attempts to adjust to the fluctuations by varying its intake of teachers for in-service courses. But because of the time lags in training pre-service teachers -- while graduates take one year for an end-on Diploma in

Education programme, those with GCE 'A' level qualification require two years for the Certificate in Education programme -- and in implementing in-service courses -- apart from conducting needs assessment, teachers have to be nominated and internal adjustments need to be made by the schools concerned when the teachers are away on course --, the adjustments at IE have not been entirely successful, as shown in Fig. 1.

(d) As a consequence of the tight control in the recruitment of teachers for pre-service programmes, upon successful completion every beginning teacher is guaranteed employment in one of the 220 primary or 141 secondary schools, 2 post-secondary institutes and 14 junior colleges. As a matter of fact, the Public Service Commission, which is the employment agency for the public sector, is part of the Tripartite Board of Admissions and grants each successful candidate a Teaching Bursary, equivalent to a monthly salary stipend that is a couple of points below the corresponding starting salary of a graduate or non-graduate teacher, as well as offers employment as a teacher upon successful completion without further interview. Selection of teachers for in-service courses, especially for the full-time upgrading courses for training prospective principals, vice-principals and heads of departments, is meticulously carried out. Thus far, all teachers who attend in-service courses are sponsored and funded by the Ministry of Education.

(e) Because special schools are run by voluntary welfare organisations with some government subsidies while kindergartens and child care centres are run by non-government agencies, less stringent conditions apply in the recruitment and training of their teachers. Thus, candidates are accepted with GCE 'O' level instead of 'A' level qualifications. While the Certificate in Special Education is a 3-year part-time programme, the early childhood education courses are of shorter duration. A child care teacher, for example, is required to undergo the Basic and Intermediate courses which entail 180 and 210 hours, respectively, of lectures plus supervised teaching practice in the centres where they are attached.

Strengthening Theory-Practice Linkages

2.1 The existence of the two disjunctions in teacher preparation identified by Turney et al. (1985), namely "the gap between the theoretical knowledge propounded in teacher education programmes and the experience of students in the practicum, and the gap between both the theoretical and experiential learning of students and the real world of work undertaken by teachers in today's schools" is probably universal. Notwithstanding exhortations by teacher educators for establishing closer theory-practice linkages, in practice, those involved in teaching theoretical or foundation studies tend to be unconcerned with bringing about greater articulation -- at best attempts to do so are rather feeble (Miller and Taylor, 1984; Vonk, 1985).

2.2 That Singapore is no exception to the persistent problem has often been confirmed by informal feedback as well as a number of empirical studies. A number of surveys on teacher education objectives, for example, reveal that there is a great deal of agreement among students, lecturers and principals in regarding the practical, "survival" objectives as being of high priority. (Mosbergen et al., 1980 and 1982). Follow-up studies of former students also confirm that beginning teachers are preoccupied with practical problems of classroom management and fail to see the relevance of many theoretical aspects of courses. (Ho et al. 1983). Typically, the correlations between grades for the theoretical components of the pre-service programmes and the practicum grades tend to be low, even though positive.

2.3 It was therefore recognised some five years ago that nothing short of a total system, major on-going offensive would be required to establish sustainable articulation between theory and practice. Through a series of in-house workshops, including a number in which overseas academics, such as Professor Cliff Turney of Sydney University and Associate Professor Ken Eltis of Macquarie University, were invited to conduct workshops, the entire pre-service teacher education programme was being transformed into what has been termed the "Practicum Curriculum". A conceptual map depicting the main components and how they are interrelated was developed, as shown in Fig. 2.

2.4 The central focus of the Practicum Curriculum is, of course, the Practicum, which is used as a collective term to denote all practical experiences that trainee teachers are exposed to, particularly in school classroom ("macroteaching") and institute laboratory ("microteaching") situations, aimed at developing and enhancing their teaching competence. Seven major roles have been identified as Planning, Instructing (which is sometimes sub-divided into Inducting and Communicating), Managing, Evaluating, Socialising, Organising and Learning, with the emphasis on the first four during the Practicum.

2.5 The seven roles are also the foci of the two core courses, the Practice of Educational Principles, or PEP(C), and the Principles of Educational Practice, or PEP(E). Whereas PEP(C) attempts to develop skills through tasks related to the roles PEP(E) provides opportunities for reflection on the principles and topics which underpin the roles and tasks. Thus PEP(C) deals with the "How", while PEP(E) deals with the "Why", of the principles and practice of education. A thematic approach is adopted in which psychological, sociological, philosophical or other principles are introduced only as they are relevant to certain practical situations associated with the themes and sub-themes.

2.6 Besides addressing the same set of roles, PEP(C) and PEP(E) would also attempt to refer to similar situations which beginning teachers are likely to encounter. Hopefully, all student teachers would develop propensities to deal with at least the less demanding situations, labelled as "Level I", characterised, for example, by teaching responsive pupils as a class on familiar topics with simple objectives and a supportive environment. Some would be challenged to deal with more demanding situations, referred to as "Level II", which could, for example, entail teaching more difficult pupils with the necessity of differential treatment for less familiar topics and with more complex objectives and a less supportive environment.

2.7 PEP(C) and PEP(E) are also tied up with the Practicum in that preceding the 10-weeks of microteaching attachment, the student teachers would have 2 weeks of School Experience, during which, besides being inducted into the school where they are attached, they would interact with teachers and some pupils, and undertake 2 assignments which concentrate, respectively, on "how" and "why" teachers do

what they do. For developing the competencies, or skills and understandings, a variety of experiences, including lectures, tutorials, directed reading and library research, guided discussions, video- and audio- tapes, simulation exercises, surveys and interviews would be provided for each of the tasks and topics. For a number of tasks and topics, "experience modules" are used, an experience module being a set of activities or materials that have been specially designed to generate interest and guide the teacher to perform one or more specific tasks or simulated classroom and school situations, or to reflect on the principles underlying the specific tasks. It usually includes some evaluative instruments and activities for assessing the achievement of objectives.

2.8 While PEP(C) and PEP(E) are concerned with more generic practices and principles, respectively, the more specific competencies, namely curriculum skills and educational understandings, are developed in the Curriculum Studies Options, or CSOs, and Educational Studies Electives, or ESEs, respectively. The CSOs focus on specific aspects which are unique to or emphasised in the respective curriculum and which aim to develop the appropriate knowledge, skills and attitudes for effective and efficient teaching under the usual constraints of syllabus requirements, pupil abilities and time available. Besides practising skills through microteaching, they would develop packages of instructional materials that would be useful during macroteaching, or teaching practice.

2.9 The ESEs serve a different purpose of the initial exposure of the student teachers to the possibilities of meaningful inquiry into principles underlying practice in the hope of whetting their appetites so that they would be interested to continue learning on their own or return to IE for in-service courses. Assignments would entail some investigatory work which could include library research or school-based action research.

2.10 At the periphery of the Practicum Curriculum are a number of courses ranging from those that develop skills (e.g. Oral Communication) to those that develop understandings (e.g. Social and Moral Issues). But these are related to the other parts in that they develop the student teachers optimally to enable them to participate more meaningfully in the other courses.

2.11 Holding together the main components of the Practicum Curriculum is a basic "pedagogical model" (Sim, 1970), which posits that pedagogical phenomena involve five omnipresent, interacting generic elements: Content(C), Objectives(O), Student(s)(S), Teacher(s)(T) and Environment(E). Thus, even when, for convenience, we choose to focus on fewer elements, for completeness' sake, the other elements would need to be considered in expanding the scope of items that could logically be considered relevant. Each element is generic and could therefore refer to a variety of situations. For example, T could refer to the classroom teacher, the teacher behind such enlivened mechanisms as the television programme, or peer tutor or even the student who is teaching himself. Each element could also have sub-components. For example, E could have Cultural, Organisational, Socio-economic, or Temporal dimensions.

2.12 Of particular interest are the triadic processes that result from focussing mainly on 3 elements among the 4 elements of C, O, S and T. They are associated with the Planning (T, C and O), Instructing (T, C and S), (Student) Learning (S, C and O) and Evaluating (T, S and O) processes. If we considered the Planning role, for example, the tasks of "Delineating learning objectives" and "Selecting content, materials and media" would constitute essential first steps. If we now extend the process to take cognisance of the needs of S, then tasks like "Planning for mixed-ability groups and slow learners" and "Planning for the gifted group" become relevant. In addition, when S is considered, other triadic processes become important in planning, so that "Determining instructional procedures", and "Planning assessment procedures" are also logical tasks to consider. Finally, if E is taken into account, the task of "Planning for emergencies" would also become relevant. All the foregoing seven tasks have in fact been identified as tasks associated with the role of Planning in the PEP(C) course, although the sequencing of these tasks is based on psychological, rather than logical, considerations.

2.13 Besides ensuring programmatic coherence within the Practicum Curriculum, several approaches or arrangements are carried out to ensure that the training is relevant to the changing needs and demands of schools and society, such as the following:-

- (a) IE works closely with the schools, especially in delineating specific experiences during practicum attachment and collaborating in supervising the trainee teachers. Special seminar-workshops are in fact mounted for cooperating teachers, especially in respect of supervision.
- (b) IE is also very responsive to impending curriculum changes by taking proactive measures, such as in formulating plans of action arising from the analysis of the changes and their implications. For example, as the contemporary debate on core values promises to gain momentum, an internal paper, entitled "The Teaching of Core Values: An IE Position Paper", has been specially prepared in readiness for further discussion and possible implementation. The paper sets out the socio-political context for values education in Singapore, deals with what Core and Supplementary values have been selected and how these are related to one another, suggests ways by which the school can be used as a more effective instrument of value education, suggests how IE could teach students the values and how to teach them in schools, and provides some practical examples of how values are being taught in IE and recommends on that basis specific strategies for teaching the core values.
- (c) Each component as well as the entire Practicum Curriculum is being closely monitored and evaluated, and, where necessary, changes are being made. For example, feedback from students is obtained periodically through formal questionnaires and interviews as well as through informal group discussions for each course as well as for the entire programme to ascertain not only the effectiveness and efficiency of each component, but also the extent of cohesiveness or duplication among the various components.

2.14 To provide another example of IE's practice-oriented and practitioner-oriented programmes, the Diploma in Educational Administration (DEA) programme will now be very briefly discussed. The DEA programme is a one-year, full-time in-service programme for preparing prospective Principals and Vice-Principals of Schools. It is of fairly recent vintage, having evolved from the concern with past practices of promoting excellent teachers to administrative

leadership positions and the avowed aim of the Ministry of Education (1982) to move progressively towards a more decentralised system of educational management by increasingly devolving responsibility to school principals. Thus, after a couple of years of having special seminar workshops conducted by overseas consultants for newly-appointed principals, the full-time DEA programme was introduced in 1984, while the short-term seminars for incumbent principals are continuing until the pool of trained principals and vice-principals has increased substantially.

2.15 As in the pre-service programmes, the DEA programme focuses on the practicum. During the 2 months of school attachment, a process of "mentoring" occurs, whereby the "protege" is attached to the mentoring principal. Basically, the protege would observe and role-model the mentor's skills and behaviours in school management as well as apply and practise conceptual, human relations and technical skills of school management. In decreasing order of priority, the management roles that the protege would attempt to understudy are programme management, organisational management, personnel management and pupil (and parent) management. Under the guidance of their mentors, the participants could start with management of specific components of the school programme and then work towards managing the entire school during last week or so of the school attachment.

2.16 Besides the close guidance, counselling and feedback by mentors to help their proteges learn and improve their practice, the IE supervisors visit the schools to facilitate the mentoring and learning process, and Ministry senior inspectors help to clarify issues raised at the school attachment review sessions. However, the critical success factor is probably the pre-attachment seminar preceding the school attachment, when the participants work very closely with their mentors, while IE and Ministry personnel provide catalytic support. During the pre-attachment seminar, some transfer of skills, such as problem analysis, judgment, organisational ability, decisiveness, leadership, sensitivity, stress tolerance, oral communication, written communication and human relations skills, takes place through specially designed simulation exercises involving role playing and case studies. Action plans for school attachment are also jointly developed by the proteges and their mentors during the pre-attachment seminar.

2.17 The other components range from one dealing with "Social, Economic and Political Aspects of Education", where a broad spectrum of invited speakers address the underlying social, economic and political values of educational policies, programmes and practices to a specialised "School Study" where a piece of action-research which focuses on the analysis of one aspect of the school programme or organisation is carried out. Because of the range of experiences, evaluation of the participants' learning, especially in putting theory into practice is very crucial. At the conceptual and analytical level, they are evaluated by course assignments and written examinations. At the performance and behavioural level, they are evaluated at tripartite meetings held between the IE supervisor, the mentoring principal and the participants. A modification of the "assessment centre", (Hersey, 1982) which is a process in which performance in a series of exercises designed to simulate work situations which require particular job-related skills jointly assessed by several assessors, is currently being validated as a "School Executive Assessment System" (SEAS). In the meantime, judging from the performance of past graduates of the DEA programme, not only in terms of their contributions in public educational forms, including interactive inputs in subsequent DEA programmes, but also in terms of the initiatives they have been showing in introducing innovative changes in their schools, there seems little doubt that theory-practice linkages are occurring.

Strengthening Preservice-Inservice Linkages

3.1 In recent years, several attempts have been made to establish closer articulation between preservice programmes and inservice programmes and courses. One such attempt has been to link the major programmes to the career paths of various school personnel, as shown in Fig. 3. The student teacher, after completing the preservice Certificate/Diploma in Education programme, would still be on probation for 2 years before being confirmed. During this period of probation, besides being inducted to the ethos and modus operandi of the particular school, the neophyte is often inducted into an emerging feature of professionalism in teaching by being involved in School-Based Projects, under the supervision of the Principal or some senior staff.

3.2 For confirmed teachers who have demonstrated leadership potential, a full-time programme, leading to the Further Professional Certificate in Education (FPCE) for primary teachers and the Further Professional Diploma in Education (FPDE) for secondary teachers, is available for developing their knowledge and competence in becoming a Head of Department. As in other major programmes, the Practicum occupies centre-stage and, since Heads of Departments are expected to supervise other teachers, participants are given an opportunity, and are assessed on their competence in supervising younger teachers in training. Initially, they follow an IE supervisor and sit in on practicum conferences, but later they take over the task of supervising the preservice student teacher.

3.3 A cursory examination of the various other courses should reveal that they have included proactively many new directions which are related to what Heads of Departments (HODs) are increasingly being expected to be responsible for. The course, "School Organisation and Department Management" distinguishes it clearly from a corresponding course in the DEA programme which focuses on school management and another in the Master of Education programme which deals with theories and research in organisational management. The other management studies course, "Management of School-Based Programme Implementation", highlight the role of HODs in conducting school-based workshops as well as in coordinating school-based projects.

3.4 "Current Issues in Curriculum and Instruction" is never static and attempts are made to reflect the frequently changing curriculum scene in Singapore. "Coordinating Curriculum Implementation and Evaluation in Cognate Areas" stresses the unique role of HODs in coordinating subject areas for which they might not have the expertise, such as Humanities Department which would include subjects like History, Geography, Economics, Commerce, Accountancy, Management and Moral Education. The courses "Classroom-Based Research" and "Developing Programmes for Children with Special Needs" are intended to equip HODs with the empirical framework and skills to bring about changes in instruction and student performance. Likewise, "Information Technology and Educational Management" equip them with new perspectives and skills in using computer-based management practices which are increasing in importance as the use of computers in schools expands progressively each year.

3.5 As the pool of trained HODs enlarges, it is envisaged that all, if not most, participants in the DEA programme would be drawn from them and that, upon successful completion of the DEA programme, they would initially be appointed as Vice Principals and based on a carefully monitored track record of performance some would later on be promoted to Principalship positions. There are also other paths available for professional development than the school and department management route. Those who are research-inclined could, if they satisfy prerequisite requirements which includes an interview that seeks to gauge the extent of reading of the research literature and ability to identify and formulate a relevant area of study rationally and realistically, attempt the Master of Education programme which has course-work plus a research thesis. Those who complete this programme successfully would potentially be candidates for appointment as officers in the Ministry of Education or IE.

3.6 A variety of short-term in-service courses is always available for school personnel to develop professionally. Apart from those like the DEA programme for "upgrading" to new positions of responsibilities, most courses are meant for "updating" teachers to the most recent knowledge and skills that would enable them to perform a better job. Some courses are pitched at the level of pre-service courses to allow those who have attained the minimal but not the optimal level of competence or who have selected a different specialised elective course than what they are subsequently interested in pursuing. These are regarded as "uplifting"

3.7 In recent years, all in-service courses have been modularised in terms of 30-hour modules that are classified into 3 levels. Level I courses are introductory or refresher courses comparable to the "uplifting" courses. Level II courses extend the breadth of any specialised area, while Level III courses go into greater depth of specialisation. With the completion of stipulated numbers of modules at all 3 levels, a Specialist Diploma in the particular area of specialisation would be awarded. As this system of combining separate in-service courses is relatively recent, no one has yet completed and been awarded a Specialist Diploma. The first such diploma to be awarded is likely to be in Pastoral Care, Counselling and Career Guidance", for 29 schools are currently being involved in a pilot project on developing a system of pastoral care and career guidance in their schools and teachers are being sponsored to undertake these modules that are being conducted on a school-based or school-focussed basis, and many are currently embarking on Level II modules.

3.8 The present configuration of modules for the Specialist Diploma in Pastoral Care, Counselling and Career Guidance are as follows:-

- | | | |
|------------|----|---|
| Level I | 1 | Introduction to Pastoral Care and Career Guidance in Primary/Secondary Schools |
| | 2 | Basic Skills in Tutoring and Group Guidance for Primary/Secondary Schools |
| | 3 | Basic Skills in Pastoral Casework for Primary/Secondary Schools |
| Level II | 4 | Developing and Implementing a Pastoral Curriculum (Core) |
| | 5 | Implementing Career Guidance in Schools (Core) |
| | 6 | Advanced Skills in Pastoral Casework (Elective) |
| | 7 | Advanced Skills in Group Counselling (Elective) |
| | 8 | Managing Pastoral Systems (Elective) |
| Level III: | 9 | Assessment and Evaluation in Pastoral Care, Counselling and Career Guidance (Core) |
| | 10 | Research and Development in Pastoral Care, Counselling and Career Guidance (Elective) |
| | 11 | Theories and Issues in Counselling (Elective) |

It would, of course, be possible, from time to time to substitute particular modules with new modules or to exempt anyone who has been exposed to equivalent courses from any specific module. For example, Module 1 is similar to an elective course offered at the pre-service stage and those who have passed such a course could be granted such an exemption. Similarly, if a HOD who had completed the FPDE programme and demonstrated that he had focussed his assignment for the course on "Developing Programmes for Children with Special Needs" or pastoral care equivalent to the treatment in Module 4, he could take a placement test and offered exemption from this module. Such flexibilities are possible only if the Specialist Diploma is sufficiently clear regarding what constitutes a specialist in the area of specialisation in terms of whether the knowledge and skills are essential or additional to what a guidance and counselling specialist is expected to have. Thus, as and when new ad hoc courses are introduced in guidance and counselling, these could be appropriately slotted as possible alternatives to existing modules.

4 Strengthening Research-Training Linkages

4.1 Until recently, IE's research efforts have tended to be "spotty and sporadic rather than systematic and systemic" (Sim, 1983). The planning of a Conference on "Research and Teacher Education" in 1983 probably marks the beginning of re-thinking towards a proper "juxtaposition of research and teacher education" and a new resolve in conducting research relevant to the problems and practice of teacher education. Leading up to the Conference, four teams were formed, each of which attempted to conduct preliminary investigations into one area of policy- and practice-oriented research - namely Additional Selection Instrument, Innovative Teaching Methods, Assessment of Teacher Trainees, and Follow-up Studies of Former Students and provided useful inputs to the Conference based on their initial findings and observations.

4.2 The next few years began to witness the emergence of a concerted strategy towards mapping programmatic research in teacher education. Before discussing IE's Research Agenda, or IRA for short, it would be useful to explore some key assumptions that undergird the decisions and actions being taken.

Assumption 1. "Rapid reforms, as well as routine rituals, in teacher education have been taking place in Singapore by and large without the benefit of relevant research." There have, of course, been several, albeit mostly ad hoc, studies, even prior to the establishment of IE, but they tend invariably to be conclusion-oriented research. Besides the lack of a research tradition in which the conduct and use of research constitute the normal expectations of staff, there have been occasions in the past when interest in research was accorded scant support, if at all.

Assumption 2. "Research, if properly conducted, can enlighten practice and policy; hence, closer linkages need to be established between research and practice as well as between research and policy in teacher education." Even among so-called professionals, this act of faith is largely absent, often times justified skeptically or cynically by the lack of demonstration of research impact or utilisation in the real world.

Assumption 3. "Research in teacher education, even in other countries, has tended to lack fidelity, credibility and usability." The lack of "fidelity", or the similarity between behaviours and conditions being studied and the actual behaviours and conditions, to which inferences are ultimately made, in much of teacher education research was pointed out by Schalock (1979). The lack of concern with usability of research, which also tended to be regarded as academic exercises of an esoteric nature, is another major factor contributing to the lack of credibility of research for practitioners and policy-makers alike.

Assumption 4. "Researchable problems of teacher education in Singapore are no less, and certainly no less complex, in comparison with those in larger countries and attempts to investigate, and hopefully resolve, them should therefore not be confined to the very limited number of certified researchers available." Without a critical mass of researchers to tackle the numerous and diverse problems of teacher education, the impact of research would continue to be meagre, unless alternative strategies are explored.

Assumption 5. "Through systematic and systemic research, involving collaborative and concerted efforts accompanied by publications and promotion activities, the place of research in teacher education will, over the long haul, be slowly but surely established." Re-affirming such a conviction is perhaps necessary as a countervailing force against an otherwise rather dismal track record of the role of research in teacher education.

Assumption 6. "The ultimate, ideal scenario is for **ALL** educational professionals to be **research-literate** in being able to understand and use relevant research, for **MOST** of them to be **research-oriented** in being able to conduct action research to improve practice, and for a dedicated **FEW** to be **research-wise** in being able to conduct and promote rigorous, yet relevant and realistic, research likely to be used for improving education, including teacher education." As and when the teaching profession becomes a research-oriented one, it is hoped that there would no longer be any doubt whether it is indeed a true profession.

4.3 There are at least 6 prongs in IRA. The **first** is to provide suitable facilities and resources to support relevant research. While the internal allocation of funds for research is still rather modest, attempts have been made to solicit funds from external sources. One example is a longitudinal study on "Cognitive and Social Development of Pre-school Children in Singapore" which is funded by the Bernard van Leer Foundation and already in its fifth year. Since 1982, IE managed to install 4 terminals which were linked to the Ministry of Education's mainframe. While this was not the most satisfactory arrangement, it facilitated the conduct of large-scale research which required massive data processing. Since a year ago, however, IE has been able to set up a Computer Services Centre, together with installing its own mainframe. At the same time, many more microcomputers were acquired and in-house training in the use of statistical packages have been conducted for interested members of staff.

4.4 The second prong in IRA is the formal recognition of research as a crucial criterion for staff recruitment, promotion and development. Explicit statements pertaining to research and publications are now included in recruitment advertisements and promotion guidelines. Likewise, staff development which has been stepped up since 1982, with about 10% of staff away each year on postgraduate studies or sabbatical leave, potential in undertaking research work needs to be demonstrated by evidence of involvement in research prior to application for staff development. In the case of staff who embark on doctoral studies, a further requirement, and provision, is for them to return to Singapore after the required period of supervised study in order to undertake their research on some locally relevant problems.

4.5 Other less formal modes of staff development have also been pursued. For example, through a cost-sharing arrangement with the International Development Program of Australian Universities and Colleges (IDP), Australian scholars had been invited to conduct short workshops for staff on such topics as "Testing and Research Methodology," "Structural Equations and Path Analysis," "Programme Evaluation," "Research on Tertiary Teaching," "Research on Computers in Education," "Research on Educational Administration," "Research on Career Guidance," and "Research on Microteaching, Supervision and the Practicum Curriculum." Under this scheme, some members of staff were also sent on study visits to a number of Australian institutions where relevant research and development activities have been taking place. In addition to ad hoc arrangements which capitalise on scholars passing through Singapore or on sabbatical attachment to IE, an in-house series of staff interaction seminars has enabled staff to meet periodically to exchange ideas and experiences regarding research.

4.6 To further encourage staff to recognise the importance of research, senior management officers have endeavoured to demonstrate active interest and involvement in research. This constitutes the third prong in IRA. The writer is, for example, currently undertaking a local and two cross-cultural studies. Moreover, with the establishment of student and other data bases, it has been possible for instance to carry out periodic studies of student enrolment and performance trends, for purposes of administrative decision-making. Systematic evaluation, including some form of follow-up evaluation in the case of in-service courses, has also become an integral part of all programmes and courses.

4.7 The fourth strategy is to incorporate research, or at least some investigatory work, into the major pre-service and in-service programmes. Staff have been encouraged to convert course assignments, which have hitherto tended to be mostly essays requiring library research, to pieces of investigations which could be cumulated, perhaps after a number of years, to form a fairly substantial research project under the leadership of the staff concerned. For the full-time programmes for preparing prospective principals, vice-principals and heads of departments, action research and school-based study are essential courses. In 1983, the Master of Education (M.Ed.) programme was also revamped to incorporate proper course work and supervised research, in contrast to the laissez-faire approach practised previously whereby a candidate was assigned to a supervisor who would then be solely responsible for guiding the candidate. For comparison, it might be of interest to note that whereas only 7 were successful in obtaining the M.Ed. degree between 1973 and 1983, about 60 have so far graduated from the batches of students admitted to the revamped programme since 1983.

4.8 The fifth prong involves the sensitisation of all educational personnel towards the possible use and/or conduct of research. With the incorporation of components dealing with some aspects of educational research, or at least of action research, in pre-service and in-service courses, it is hoped that the next generation of teachers would perceive research as a potentially useful professional ally rather than the esoteric tool for ivory tower residents. Another channel for communicating information and ideas on research is through publications. Besides the continuance of its research journal, the Singapore Journal of Education, on a more regular bi-annual basis, IE has also been stepping up the production of Research Papers and including more articles based on research findings in its less formal periodical for teachers, Teaching and Learning. Since 1982, a unique bi-annual series of Research and Evaluation Abstracts for Classroom Teachers, or REACT, has been published. By reducing the technical jargon to an absolute minimum and using cartoons and simple illustrations, the articles highlight those aspects of relevant research that are likely to be useful and interesting to classroom teachers. Because of the Ministry of Education's financial support in enabling every teacher who is interested to be given a free copy, it has been possible to reduce cost drastically and, hopefully, more teachers would be able to read about research and evaluation conducted locally and elsewhere.

4.9 A major initiative involved the formation of an Educational Research Association (ERA), which, unlike other research associations such as AERA, has the bulk of its membership coming from school personnel, while a major function of the association is "To provide professional support for school-based programmes." Among its main activities are the publication of the ERA Bulletin, holding a number of workshops focussing on trends in specific areas of research, such as Computer Assisted Language Learning and Mathematics Education, and an annual conference, which has a unique feature of involving participants in examining simulated or actual data in order to arrive at meaningful recommendations.

4.10 In an effort to play a more effective and efficient role to support school-focussed as well as IE-focussed research, an Educational Research Unit (ERU) was set up in early 1988 with the main aim of developing, through the promotion and practice of research, a better understanding of the process of teacher education, of the ways to improve the training of teachers and also of the processes that take place in school classrooms that form the focus of discussion in various courses. Arising from a number of in-house brainstorming sessions a modest agenda for ERU was developed, based on Sim's (1987) conceptual framework, which has been set up to generate a number of research questions in four domains, namely, Input-Throughput-Output (ITO), Theory-Practicum Linkages (TPL), School Teacher Effectiveness (STE), and Innovative Teaching and Learning (ITL). As shown in Fig. 4, there are two dimensions to the four domains, that is research in teacher education can be (a) IE focussed (IEF) or (b) School-classroom focussed (SCF) and in turn either dealing with (a) factors associated with performance (FAP) or (b) the effectiveness of innovative procedures (EIP).

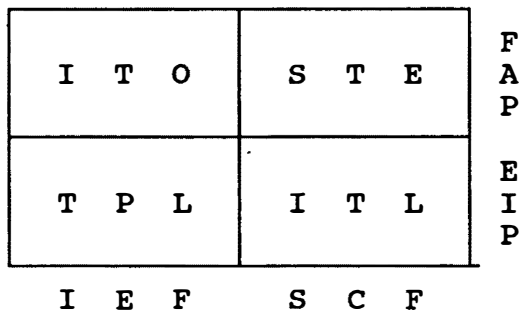


Fig 4. A Conceptual Framework for Research in Teacher Education

4.11 Some 24 research questions were initially generated by the writer (1987) and these were subjected to further prioritisation which yielded 10 top questions which then formed the basis of 7 projects, as follows, that are currently under way:-

Project IT01: IE Selection Criteria

How predictive are existing selection criteria of performance in the pre-service programmes and subsequently in school?

How do additional/alternative selection criteria compare with existing criteria in predicting performance in the pre-service programmes and subsequently in school?

Project IT02: IE Programme Effectiveness

How effective are the different courses/programmes in terms of end-of-course/programme performance as well as subsequent performance of expected roles in school?

How should pre-service courses/programmes be modified to cater to the needs and problems (perceived or otherwise) of beginning teachers?

Project TPL1: Theory-Practicum Linkages

How extensively are theoretical principles and research findings being used in practicum conferencing and practicum experiences being used in theory courses?

Project TPL2: Experienced Teachers' Use of Theory

How extensively are theoretical principles and research findings being used by experienced teachers in decision-making?

How effective is cooperating teacher training/orientation in helping them to use theoretical principles and research findings when they supervise student teachers?

Project STE1: "Expert" versus "Novice" Teachers

How do "expert" teachers who are effective according to academic as well as non-academic criteria differ from "novice" teachers in various teaching roles?

Project ITL1: Effectiveness of Learning Strategies

How effective are methods aimed at fostering learning strategies and metacognitive skills in students of varied background characteristics?

Project ITL2: Effectiveness of Career Guidance Approaches

How effective is the use of "non-traditional" approaches, including non-traditional personnel and technologies, in developmental career guidance?

5 Conclusion

5.1 While recent efforts in developing closer articulation between theory and practice, preservice and inservice teacher education, and research and training, including the incorporation of societal and educational needs seem to be bearing fruit in terms of the development of better quality educational personnel, the problem remains of attracting quality students to IE, especially in the face of strong competition from other sectors. The Ministry of Education has been making major efforts in attracting school leavers and university undergraduates to the teaching profession, by such means as having prime time television commercials and conducting career talks. But so long as the salary structure and promotion prospects for teachers are relatively less attractive compared to other services, these efforts are unlikely to exert a strong impact.

5.2 Another possible factor is the apparent lowering of prestige of teacher education in Singapore, for when IE was established in 1973, instead of viewing it as comparable to a University Faculty, since one of its components was the School of Education in the then University of Singapore, the prevailing perception tends to be in terms of another component, the Teachers' Training College, which was a branch of the Ministry of Education. This perception probably accounts for its treatment in comparison with other tertiary institutions, for it tended so far to be given the least support in terms of further development.

5.3 However, considering the relative constraints, IE has been striving to maintain a high degree of excellence and to all intents and purposes, in terms of staff development, research and publications and postgraduate programmes, it is functioning virtually as a University Faculty. Thus, in recent months when the Ministry is seriously considering the setting up of a third university with Education forming the core, together with other new disciplines like Music, Fine Arts and Drama, IE is ready to take off to greater professional heights in teacher education.

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Fig. 1

IE STUDENT ENROLMENT IN FTE

AS AT JUL

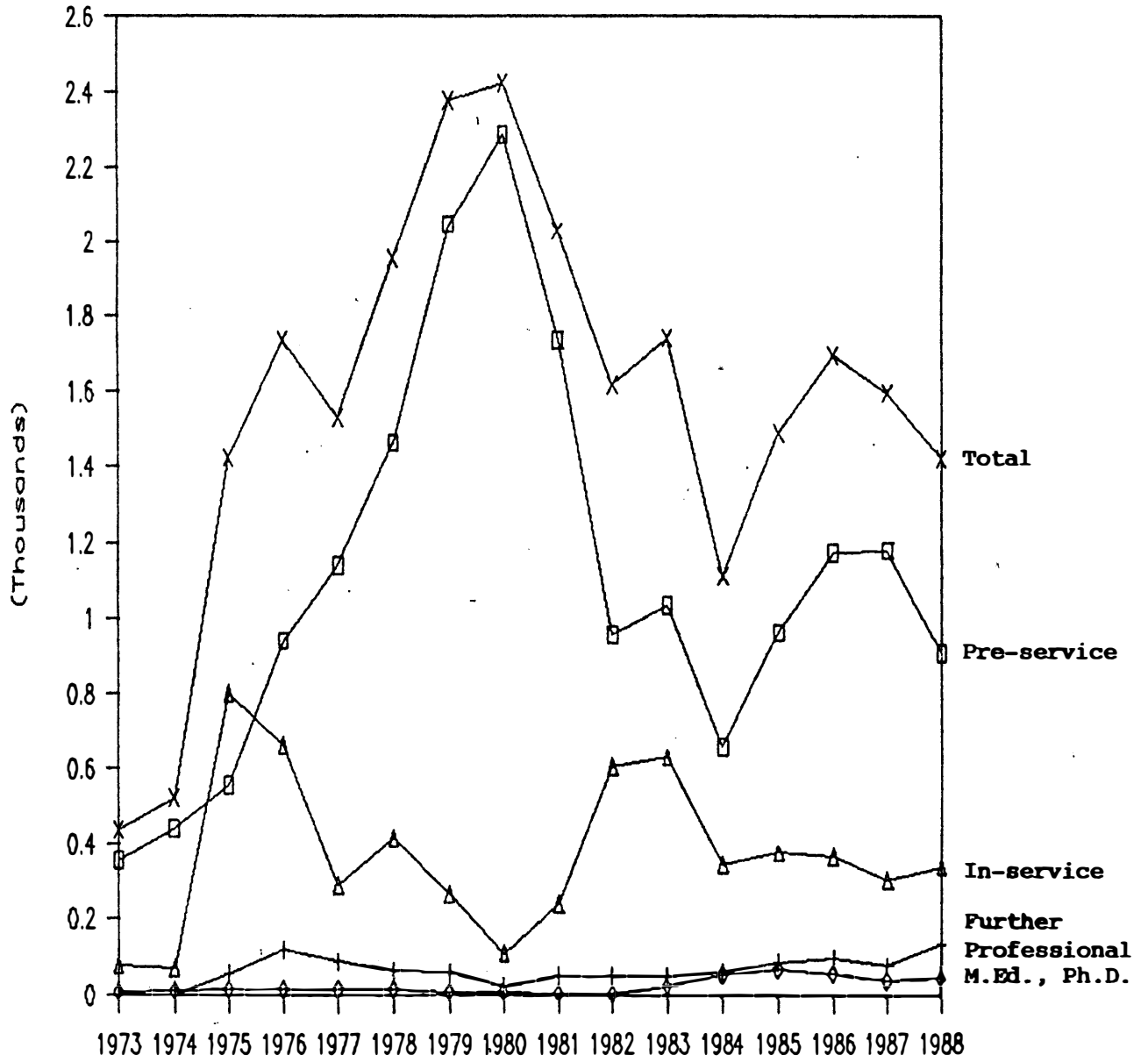
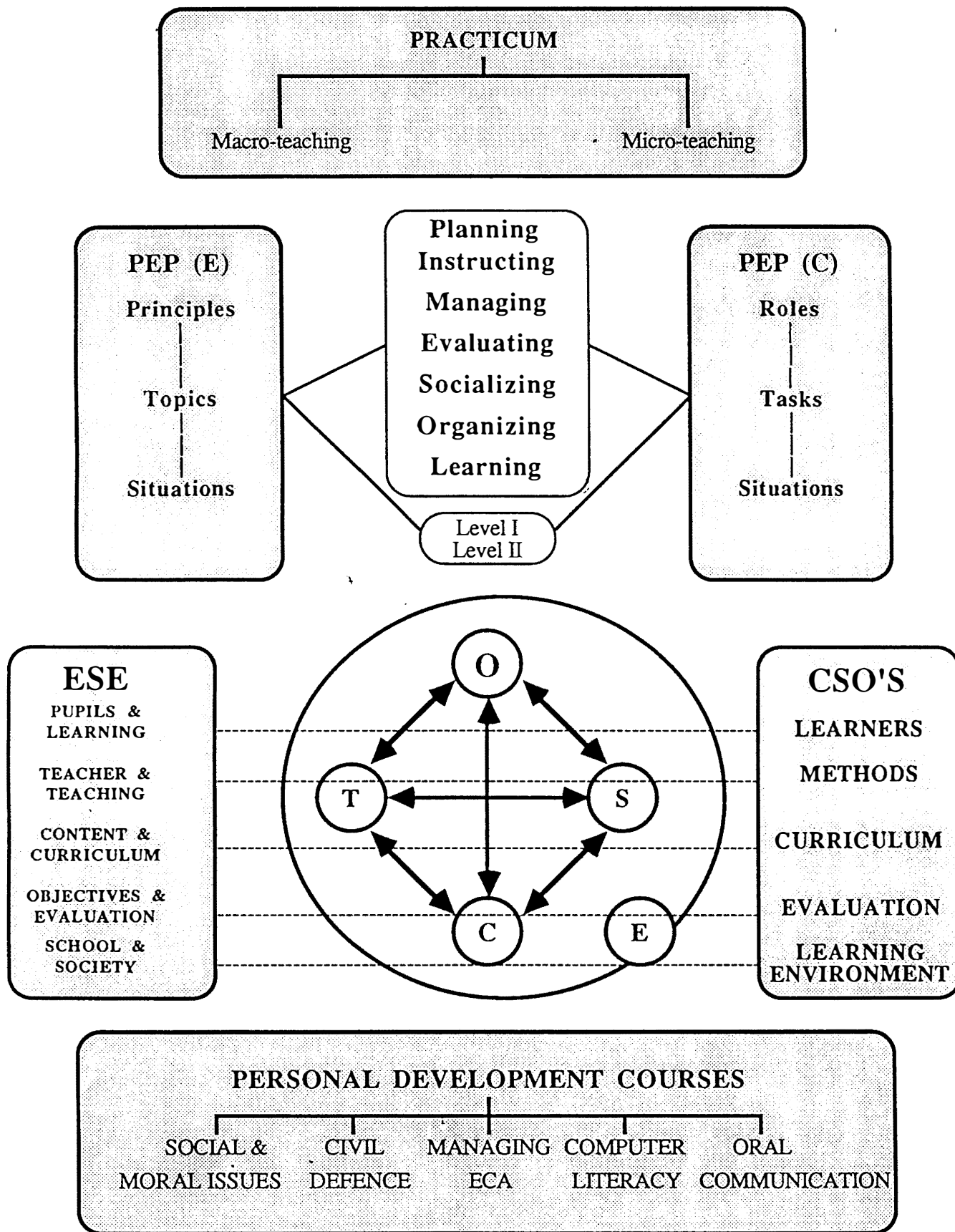


Fig. 2

THE PRACTICUM CURRICULUM



Legend: PEP(E) = Principles of Educational Practice
 PEP(C) = Practice of Educational Principles
 ESE = Educational Studies Electives
 CSU = Curriculum Studies Options
 C = Content, O = Objectives, S = Students,
 T = Teacher, E = Environment

Fig. 3
 PROGRAMMES/COURSES AND
 CAREER PATHS FOR SCHOOL PERSONNEL

