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AN ANALYSIS OF RESEARCH ON TEACHING AND TEACHER EDUCATION IN SINGAPORE (1989-1999): PRELIMINARY FINDINGS

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Introduction

According to Ho's (1992) review of research on teacher education in Singapore (1968-1988), forty five available studies fall into six categories: *reasons for choosing teaching, objectives of the training programs, additional selection criteria, assessment of coursework, teaching practice, and follow-up studies of former trainees*. Most studies are quantitative and employ primarily questionnaire survey methods.

The purposes for this analysis are twofold: to establish what is currently known about teaching teacher education on the basis of the research literature available in Singapore from 1989 to 1999, and to formulate recommendations for future research on teacher education. For these purposes, we adopt a more comprehensive view of research on teacher education. The term *teacher education* is used to include both initial and continuing teacher educations. We include studies that potentially inform policies and practices in teacher education—studies about who the teachers are, about how teachers teach, and about teacher education curriculum and contexts—into the analysis, encompassing not only empirical research reports, but also normative or conceptual papers.

We first present an overview of what this body of studies tell us about teaching and teacher education. We then present a critique of the mainstream research in terms of its research approach and paradigm. In the last part we discuss new alternative approaches and paradigms that take into account the challenges to research on teaching and teacher education, which have been created by current reform initiatives.

What is currently known about teaching and teacher education

Six broad categories of interest characterise the body of research conducted in Singapore over the last ten years. They include 1) teacher assessment and selection criteria, 2) teacher behaviour, personality and affective domain, 3) teacher cognition, 4) how teachers teach, 5) teacher professionalism, collegiality and action research, 6) teacher education curriculum, and 7) teacher education contexts.

Teacher assessment and selection criteria (Soh, 1990; Soh & Ho, 1990)

What the studies tell us:

- Open-ended assignments have more positive effects on pre-service teachers and teacher educators. Written examinations seem to assess pre-service teachers' skills rather than high-order thinking.
- Research for alternative teacher selection criteria is complicated by issues in relation to sample selection, model choices, the interaction between cognitive and affective variables, and others.

Teacher behaviours, personality, and affective domain

- Teacher skills and behaviours (Chua, 1995; Goh & Chia, 1992; Kaur, 1991)
- Teacher personality (Soh, 1990; Quah & Teo, 1994)
- Teacher job satisfaction: in-service (Sim, 1989; Khor, 1990; Stott & Tan, 1999); pre-service (Lam et al., 1995a&b)
- Teacher concerns and stresses (Mau, 1997; D'Rozario & Wong, 1998)
- Teacher motives or motivation (Low, 1993; Lee, 1989; Soh 1989a)
- Teacher attitudes or dispositions (Soh, 1989b; Chua & Tay, 1998; Haassan & Cheng, 1998; Lee et al., 1995; Saravanan & Poedjosoedarmo, 1996)

What the studies tell us:

- Teacher behaviours and personality can be the predictors of teaching effectiveness and the criteria of teacher selection.
- Teacher job satisfaction is influenced by work environment, opportunities for school involvement and professional development, recognition and rewards.
- Teacher job satisfaction, motivation, attitudes, concerns and stresses are important factors that would affect their job commitment, teaching quality, and professional learning.

Teacher cognition

- Teacher subject matter knowledge and beliefs (Lloyd et al., 1998; Lim, 1991; Lee et al., 1997; Lee, 1998; Lee & Yeoh, 1998; Boo, 1995; Boo & Toh, 1998; Cheung & Toh, 1990; Alexander et al., 1998)
- Teacher misconceptions in science (Boo & Yeo, 1991; Lee, 1999; Chin, 1993)
- Teacher beliefs about teaching & learning (Perry et al., 1996; Toh, 1994; Cheung & Toh, 1990; Chew & Wong, 1994; Khoo, 1990; Ow & Ho, 1993; Gupta & Saravnan, 1995)
- Teacher scientific thinking ability (Boo & Toh, 1998a&b).
- Teacher perceptions: preparedness for teaching (Lim & Yap, 1999); school environment (Ball & Moselle, 1993), effective schools (Ho & Low, 1997), discipline problems (Tan, 1997; Jone & Quah, 1994)

What the studies tell us:

- Pre-service teachers might hold misconceptions of some particular topics they are supposed to teach in science.
- Pre-service teachers might lack of understanding of certain concepts they are supposed to teach in science and math.
- Teachers are inclined to view knowledge as a body of facts, describing teaching in terms of imparting knowledge, and learning in terms of receiving, memorising, and practising knowledge.
- Teachers' beliefs and perceptions have the capacity to shape their classroom practices and professional development.

How teachers teach

- Expert and novice teachers & reflective practices (Chen et al., 1989; Chen 1990; 1991a&b; 1992; 1993; Chen & Seng, 1992; Wong & Koh, 1990; Ng, 1990; Yeo, 1990)

- How classroom practices look like (Chew et al., 1997; Kaur & Yap, 1997; Toh, 1994)
- How teachers adopt new practices (Toh et al, 1996; Ee & Morre, 1998; Chin et al., 1994; Ow & Lee, 1989; Gupta et al., 1997; Deng & Gopinathan, 1999)

What the studies tell us:

- Teachers are rational professionals who make judgements and carry out decisions on an uncertain, complex environment.
- Classroom practices are guided and informed by teachers' thoughts and beliefs within a particular social and political context.
- The primary teaching style adopted by most Singapore's teachers is whole class teaching in which the teacher dominates most instructional discourse.
- Learning to teach in new ways requires change in not only in teachers' behaviors, but also in their understanding and beliefs. Providing teachers supports in the process of learning about new practices and new beliefs is crucial.

Teacher professionalism, collegiality, and action research

- Teacher professionalism (Chia et al., 1994; Toh et al., 1996)
- Collegiality (Teo & Tay-Koay, 1998)
- Action research (Eng, 1990; Tan, 1990)

What the studies tell us:

- Professional development—neither academic qualification nor teaching experience—is an important contributory factor to teacher professionalism.
- Teacher collegiality might take the forms of conversation and help among teachers. Opportunities to work together, school social contexts, school policy, and teacher beliefs are the contributory factors to collegiality.
- Action research has the potential of enhancing classroom practices and teacher professional development

Teacher education curriculum

- Curriculum development and changes (Ho, 1990; 1992; Gopinathan et al., 1999; Chellappah et al., 1998)
- Teaching practicum (Sharpe et al., 1994; Rose & Church, 1998)

What the studies tell us

- Teacher education curriculum has always sought to respond to changes in the educational system and to new educational initiatives, in the light of the societal and political needs
- The linkages of theory and practice, of research and training, and of pre-service and in-service have been always the key issues in the development of teacher education curriculum
- Supervision discourse in teaching practicum was characterised by a “telling” style; and co-operative teachers and NIE supervisors had different emphases in supervisions.
- Classroom practice with performance feedback has a strong effect on the acquisition and maintenance of skills.

The contexts of teacher education (Sim & Ho, 1990; Sharpe & Gopinathan, 1993; Gopinathan, Ho, & Tan, 1999)

What the studies tell us:

- Teacher education is embedded in multiple layers of contexts (e.g., the university, the Ministry of Education, the school system, and the society at large), each of which has the capacity to shape what form of teacher education takes and how teacher education is conducted.
- Teacher education has always responded to the societal and political needs through developing closer articulation between theory and practice, pre-service and in-service, and research and training.

The research mainstream: its approach and paradigm

A vast majority of studies has concentrated on assessing who the teachers are in terms of behaviours, personality, concerns and stresses, motives, attitudes, job satisfaction, conceptions or misconceptions, knowledge, perceptions and beliefs. Only a small number of studies have focused on understanding how teachers teach, teacher education curriculum, and teacher education contexts. Most of the research has employed a quantitative methodology in the form of questionnaire survey and statistical analysis. Only a few researchers have provided sufficient theoretical/conceptual clarification and justification for their studies.

The observed domain trend and approach can be explained in terms of research paradigms. Most NIE researchers appear to operate within a strong existing research paradigm—"scientific" psychological tradition. For more than a half century, psychology has been the most important discipline in the training of educational researchers, and the most influential paradigm for the study of teaching and teacher education (Shulman, 1986; Lanier & Little, 1996). Within the scientific psychological paradigm, researchers tend to define teacher education research as studies in which teachers' knowledge, attitudes, behaviours, and personality are assessed quantitatively at a certain different point of the teacher educational program or professional career. They have the tendency of excluding the social, historical and political contexts of teaching and teacher education from analysis. Researchers adhering to the scientific psychological paradigm tend to ignore the complexities of teaching practice (Cohen, 1988). Further, they are inclined to overemphasise gathering empirical data and under-emphasise explicating theoretical and conceptual underpinnings (Lee & Yarger, 1996; Lanier & Little, 1986).

Moving toward alternative research approaches and paradigms

As we look at the field of research on teaching and teacher education in the West over the last two decades, we encounter a very different set of research trends. Not only are those more often qualitative than quantitative methodologically, but their parent disciplines are now more frequently anthropology, sociology, linguistics, philosophy, and the social sciences. The major trends that have galvanised the field are 1) research settings moving from the laboratory to school site; 2) qualitative research becoming a widely accepted research method; and 3) the foundation of research becoming more diverse and interdisciplinary (Lagemann & Shulman, 1999). It is believed that research on teaching and teacher education is apt to be advanced least by adherence solely to the scientific psychological paradigm (Shulman, 1986).

We are convinced that the current research approach and tradition in Singapore cannot fully capture the complexities of teaching and teacher education, nor can they stand up to the challenges created

by our current situation and the reform initiatives. One challenge is to understand the nature of classroom practices within the context of new initiatives. The new initiatives have the tendency of steering classroom practices toward more uncertain, more demanding, and more challenging. To teach in a way that is consistent with the expectations in the IT-masterplan, for example, teachers need to guide students to tap into a variety of relevant IT-based resources, encouraging their communication skills and critical and creative thinking. They need to alter traditional whole class teaching approaches in favour of those that emphasise students' engagement, collaboration, and discovery. They need to adopt various new roles--such as the role of a co-learner, the role of a learning guide, the role of a facilitator, and the role of an innovator. They need to creatively use IT as a cognitive tool, an information tool, and a communication tool in achieving curricular objectives (Deng & Gopinathan, 1999). Other new initiatives--such as the introduction of National Education, the infusion of creativity and critical thinking skills into curriculum, and the introduction of desirable learning outcome--have created further new demands and challenges to teachers in their classroom practices as well. What exactly are the reformed teaching practices like? What would teachers have to know, value, believe, and do in order to carry them off? What difficulties and challenges would they have to encounter as they attempt to teach in the new ways? What would be the conditions that can not only equip and enable teachers to overcome the difficulties and challenges but also lead them to success? These are new, complex, challenging questions for research on teaching and teacher education.

Another challenge is to understand teacher education and teacher learning. Teachers have their own values, beliefs, perceptions and expectations by the time they enter teacher education programmes. Their values and beliefs are often limited and conditioned by their own experiences with conventional practices, and many of them would be in conflict with those underlying in the reform initiatives. The values, beliefs, and expectations they brought with would not only interact with what they learn, but also with how they learn in teacher education programmes. We can no longer assume that teacher learning occurs solely through receiving new knowledge and skills. Learning to teach in the new ways requires teachers to alter their values, perceptions, beliefs and assumptions. Therefore, there is a need of continual investigation of what expectations, values, and beliefs that teachers bring with to new experiences. Furthermore, there is a need of examining how teachers transform their understanding into better ways of understanding teaching in line with the reform visions. Thirdly, there is a need of investigating the processes and outcomes of teacher education programmes or modules that are designed to change teachers' attitudes, values, beliefs, and understanding. Fourthly, there is a need to examine how teachers respond, interpret and enact new educational policy. Last but not the least, there is a need of exploring what conditions in the multiple contexts of teacher education make it more or less likely that embrace the reform initiatives, will venture the long process of implementation, and will persist in the endeavour.

To face these challenges, we call for more alternative approaches and paradigms--new ways of thinking or patterns of research on teaching and teacher education. Alternative approaches can include case study research, ethnography, philosophical research, historical research, correctional research, experimental research, and survey research (Lee & Yarger, 1996). The sources of paradigms for research on teaching and teacher education should come not only from psychology, but also from sociology, anthropology, history, philosophy, linguistics, and the political sciences (Shulman, 1988). Alternative approaches and paradigms--that supplant one another so much as provide opportunities to examine particular aspects of teaching and teacher education more closely--allow rich descriptions, and the shift from a single dominant research paradigm to a coexistence of alternative paradigms will enrich the study of teaching and teacher education. Perhaps we should adopt the metaphor "conversation," as an on-going dialogue among researchers committed to understanding and improving teaching and teacher education, in a manner that a wide spectrum of a both disciplinary perspectives and methodological alternatives can coexist (Shulman, 1988)

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