Innovative Practices in Pre-Service Teacher Education

An Asia-Pacific Perspective

Cher Ping Lim
Edith Cowan University, Australia

Kenneth Cock
Putera Sampoerna Foundation Teacher Institute, Indonesia

Graeme Lock
Edith Cowan University, Australia

and

Christopher Brook (Eds.)
Curtin University of Technology, Australia

Pre-service teacher education is a crucial component of the lifelong process of the professional development of teachers as it equips prospective teachers with the necessary and sufficient competencies to design meaningful and authentic learning environments that engage students in the learning process. If done well, it enhances the quality and improves upon the retention of teachers in the profession. This book is important because it attempts to deconstruct the nature and describe the practice of current pre-service courses and programs in the Asia-Pacific region, examine new paradigms of pre-service teacher education and their implications for practice, and explore emerging innovative practices. Moreover, this book’s particular focus on engaging new partners and on harnessing required resources and capacities in the process; together with the particular role that new technologies may play in the new partnerships is especially valuable. Drawing upon leading scholars of teacher education from the Asia-Pacific region, the 12 chapters in this book are divided into three main sections to revitalize and inform the scholarship and debate on teacher education:

– Examining Pre-Service Teacher Education
– Engaging Partners in Pre-Service Teacher Education
– Emerging Practices in Pre-Service Teacher Education
Innovative Practices in Pre-Service Teacher Education

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Christopher Brook
*Curtin University of Technology, Australia*
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ABOUT THE AUTHORS

All four authors are from the Asia-Pacific Centre of Excellence for Teacher Education and Innovations which is a partnership between Edith Cowan University in Australia and Putera Sampoerna Foundation Teacher Institute in Indonesia. The mission of the Centre is to work collaboratively with teacher education agencies, ministries of education and schools to build the capacity of teachers and school leaders in the Asia-Pacific region in order to prepare their students to live and work in a more complex and connected world through innovative and sustainable pedagogical practices and school policies.

Cher Ping LIM is a professor of education in the School of Education at Edith Cowan University. As the Centre director, he oversees projects and sets up partnerships with ministries of education, teacher education institutions, government and non-government agencies, profit and non-profit organizations and companies, universities and schools. Cher Ping has led several large-scale research projects that involve emerging technologies, professional development of teachers and school leaders, and at-risk students. He has also provided technical consultancy on technologies in education for the World Bank, World Links, Singapore Armed Forces Training Institute, UNESCO, Inter-American Development Bank, Microsoft, ACER Computers, schools and the governments of Barbados and Oman.

Kenneth COCK is presently the director of the Putera Sampoerna Foundation Teacher Institute. The Institute is located in Jakarta, Indonesia and is supported by the Putera Sampoerna Foundation. The Foundation, perhaps the largest in Indonesia works to improve the leadership capacity of the nation through both improving the access of learners to education as well as improving the quality of the learning experience for young learners. The Teacher Institute focuses upon improving the quality of the learning and teaching through the delivery of both in-service and pre-service professional development programmes for teachers across the Republic of Indonesia. Previous to the appointment to the position of Institute Director, Ken was a secondary school principal within the South Australian education system. More recently, he has worked as the executive principal of a leading private school located outside of Jakarta, Indonesia.

Graeme LOCK is a senior lecturer in the School of Education at Edith Cowan University. He currently holds the position of Program Director Leadership, having previously been Director of the Primary Program. Graeme’s areas of teaching include pedagogical strategies, curriculum and educational leadership. His research interests include the learning, cultural and religious needs of international students enrolled in offshore university courses; the experiences of pre-service and graduate teachers in rural educational settings; curriculum development and implementation; and leadership in educational institutions.
Christopher BROOK is an associate professor and holds the position of Head of School Regional Remote and e-Learning at Curtin University of Technology. In this role he is responsible for flexible delivery initiatives across the institutions, distance education, multimedia development and regional education. Chris has worked as an Instructional Designer in tertiary settings and has been actively engaged in the design and development of online learning materials. Current research includes the exploration of online learning communities, the use of ICT in school settings, blended learning, gifted and talented education and the use of video to support learning.
FOREWORD

The list of global challenges seems to grow longer every day – only surpassed by the list of challenges likely to face the world by mid-century. The list used to include the vague and rather distant threat of globalisation and the rather more prosaic and immediate threat of bird flu; now the list, growing longer more quickly than expected, includes end-of-the-world scenarios of climate change, global warming, terrorism, and violent wars waged over dwindling, but essential resources such as water and energy.

As the longer list grows, so does the expectation that “education” will somehow come to the rescue and save the world from itself. Many educators and education systems are responding to these increasing demands. New educational subjects, most of which are values-based – citizenship, human rights, and democracy education; education for sustainable development; global and inter-cultural education – and each considered essential by its proponents, are trying to find a place in the core curriculum. Child-centered, interactive, inquiry-oriented teaching-learning methods are now standard rhetoric (if not practice) in education systems around the world. New information and communication technologies promise a huge impact on educational access and quality; and a host of innovative approaches to education – home schooling, schools without walls, “green” schools – are becoming more and more acceptable as recognised alternatives to traditional schools and classrooms.

However, one major obstacle stands in the way of these necessary innovations and reforms becoming standard practice in education systems: pre-service teacher education. This should be the crucial component of the lifelong process of the professional development of teachers as it equips prospective teachers with the necessary subject knowledge and professional skills and attitudes for effective teaching. If done well, it can motivate and retain teachers in the profession. Unfortunately, one could argue that in the case of Ministry of Education entities (no offence to pre-service training educators intended) pre-service education sub-systems are among the most conservative, the least innovative, and most difficult to change. Their staff members often have little practical experience in the levels of schooling for which they are training their trainees; their curricula often lag behind the curriculum changes mandated for the nation’s classrooms; and while the latest Ministry reform may be referred to in titles of teacher education curricula, it rarely is genuinely internalised by the entire institution and its staff. (The director of a large teacher training institution once proudly showed me the classroom where his trainees did “child-based, student-active learning” – the reform of the time – but seemed surprised by my question as to how such an approach to learning was being used in other classrooms.)

So it should come of little surprise that many donor/development agencies (and many ministries as well) would rather deal with in-service training. These courses are usually short, with a specific target group, narrowly focused, with a far simpler message and, through cascade training, supposedly able to transmit the necessary messages from the top to the bottom of the system in an effective and efficient way. However, it is often subsequently later revealed that the key messages were
terribly distorted in the long cascade to the school level and that the supplementary materials that went with the messages remained, at best, in the classroom cupboard.

So, how to reform the pre-school system? One problem in doing so, of course, is that every country does it differently: some through a Council of Deans of Education; some through a Director General of Teacher Education in the Ministry; others through the initiative of individual teacher education institutes based on loosely formulated curricular goals. Every country seems to have a different timetable for attempted reform: some undertake this regularly, every ten years for example; others on the whim of the newly installed (and frequently dismissed) Minister of Education.

Partly as a result of these complexities, there is a real dearth of serious attempts to examine, analyse, and suggest ways to reform pre-service teacher education institutions and practices. That is why this book is so important. Its attempt both to deconstruct the nature and describe the practice of current pre-service courses in the Asia-Pacific region, examine new paradigms of pre-service teacher education and their implications for practice, and explore emerging innovative practices is an important contribution to the field. Furthermore, this book’s particular focus on engaging new partners and on harnessing required resources and capacities in the process; together with the particular role that new information and communication technologies might play in the new partnerships is especially valuable. Seeing pre-service teacher education as no longer sitting inside a box, bounded by rigid institutions and timetables, but rather reaching out beyond the box to new areas of content, new partners, new networks, and new paradigms should do much to revitalise and inform the debate on teacher education so essential at this point in time.

Sheldon Shaeffer
Director, UNESCO Bangkok
In the face of rapid technological and economic developments globally, schools in the Asia-Pacific region have been under increasing pressure to prepare students who are adaptable to change and empowered to change their environments, who are creative and innovative, and who are able to apply knowledge and solve problems with confidence. Teachers in such learning environments have to take on the more demanding role of a mediator and a knowledge broker: to provide guidance, strategic support, and assistance to help pupils at all levels to assume increasing responsibilities for their own learning. The challenge then, for teacher education institutions (TEIs) in the region, is to prepare teachers who are open to new ideas, new practices and information and communication technologies (ICT), to learn how to learn, unlearn and relearn, and to understand and accept the need for change. During the pre-service teacher phase, programs in teacher education institutions play a crucial role in preparing their graduates to be change agents in schools.

This book aims to document these best practices and lessons learnt from the various TEIs in the region, and generate discussions of pertinent issues in pre-service teacher education such as pedagogical beliefs, theory-practice gap, curriculum and assessment, and ICT in education. Drawing upon leading scholars of teacher education from the Asia-Pacific region, the 12 chapters in this book are divided into three main sections:

- Examining Pre-Service Teacher Education
- Engaging Partners in Pre-Service Teacher Education
- Emerging Practices in Pre-Service Teacher Education

The first section of this book provides insights into the whys, whats and hows of pre-service teacher education in the Asia-Pacific: Why is there a need for change in pre-service teacher education? What are the changes in pre-service teacher education? How are the changes of pre-service teacher education meeting the changing needs of schools and their society? The three chapters in this section provide examples of how teacher education institutions in the region are considering the needs of their respective education systems within their courses. Two of the chapters discuss changes of the paradigm and implementation of key components of teacher education courses, while the third chapter examines pre-service teacher epistemological and pedagogical beliefs.

Cheng, in the first chapter of the book, discusses how pre-service teacher education in the Asia-Pacific region is experiencing a new paradigm. He suggests that since the 1980s there have been three waves of paradigm shifts, providing an overview of each wave, before exploring the implications for and challenges to the first two waves. The remainder of the chapter is devoted to discussing the third wave in detail. In doing so, Cheng provides empirical evidence of the positive impact of the third wave paradigm shift on indicators of secondary school student learning. In addition, he analyses pre-service teacher education in terms of the third wave aims, curriculum and pedagogy.
Northcote and Lim review the state of pre-service teacher education in the Asia-Pacific region. In the first part of the chapter they discuss how teacher education institutions are responding to the demands of teaching in the twenty-first century. While acknowledging variations in teacher education courses throughout the region, they describe the common aims and tasks of these courses. Northcote and Lim then move on to providing introductory comments on the role of partnerships between teacher education institutions and their education systems in responding to the needs of these systems. In the second part of the chapter, the authors identify the key components of pre-service teacher education courses, and then provide a general discussion about how teacher education institutions implement these components. The final part of the chapter presents a series of case studies from teacher education institutions in the Asia-Pacific region, which are specifically linked to the implementation of the key components.

In the third chapter of this section Khine, Atputhasamy, Chai and Teo discuss Singaporean pre-service teacher epistemological and pedagogical beliefs. After reviewing the literature on understanding personal epistemologies and teachers’ epistemological and pedagogical beliefs, the authors discuss research they undertook at Singapore’s National Institute of Education. Their study involved 340 postgraduate diploma in education pre-service teachers completing a questionnaire on personal beliefs and conception about teaching and learning. The structure of the questionnaire is outlined, and the results discussed and analysed, with the authors outlining recommendations based on their analysis of the collected data.

The second section of this book examines aspects of engaging partners in pre-service education. The concept is examined in terms of partnerships developed between the pre-service teacher institute and schools, as well as one chapter highlighting partnerships set up between the private sector and schools to enhance the quality and the nature of learning. The chapters indicate the importance and relevance of partnerships particularly to the TEIS that are seeking work-place experience for the students. All four chapters in this section help us to reflect on the nature of partnerships and where the power lies in the relationship. They examine how partnerships can be developed to become of mutually beneficial and hence just not rhetorical. The reader is urged to consider to what degree the examples described in each of the chapters satisfactorily meet the need to address issues around sharing of power and the mutual benefits to each party. Related closely to this are the aspects relating to the sustainability of the partnership. The sustainability and the valuing of the partnership to some degree will be dependent upon each party being able to readily identify ‘what’s in this for me’.

Lock and Yardley in chapter 4 focus upon the administrative structure developed to enhance relationships between government schools and the School of Education. The authors describe partnership relationships established with two school districts within the Western Australian Education Department. These partnerships provide both practicum placements for the student teachers, and professional development opportunities for the teachers within the schools, thus ensuring gains for both the School of Education and the school site. The chapter emphasises the need to have appropriate administrative structures to enable the
partnership; the importance of decision making being a collaborative endeavour between all the stakeholders resulting in sharing of the power.

In chapter 5, Suratno and Cock use a case study to explore the enhancement of school-university partnerships within the Indonesian context. They do this through examining the implementation of a particular programme known as 'lesson study' into schools. The partnership described incorporates collaborative efforts of the schools, school system, teacher associations and the university. The study provides some insight into the constraints, blocks and rhetoric that surrounds the notion of partnerships between schools and TEIs, and demonstrates the power of partnerships if the mutual benefits can be readily recognised by all parties.

In Chapter 6, Quah examines the nature of public-private partnerships through examples within the project, Microsoft’s Partners in Learning. Once again in this chapter the need for collaborative decision making between partners for ‘mutually agreed objectives to be achieved’ is highlighted. Quah demonstrates the value of partnerships and the influence such partnerships can have upon the reformation of teaching and learning in schools, especially when one of the partners is able to bring to the table resources to support reform. The challenge then for pre-service education is what it can bring to the school institute partnership that will help to resource school improvement.

Wong and Goh in Chapter 7 describe Singapore’s National Institute of Education’s experience in setting up partnerships with schools for teaching practicum. The authors highlight that some partnerships are ‘born out of necessity within a specific context: for example, the need for TEIs to find places for student teachers’ practicum. For the partnership to become strong there must be mutual benefits for each party and there must be some equality of power sharing, hence reinforcing the message which each of the chapters in their own way have addressed.

The third section of this book discusses emerging innovative practices using ICT in pre-service teacher education. The chapters within this section present interesting insights into how teacher education institutions offering pre-service teacher education courses are effectively using ICT to enhance pre-service teacher learning. These cases are of particular relevance as the need to prepare teachers who are open to new ideas, practices and information, together with being able to use ICT in both their learning and teaching becomes increasingly important. For university academics, who have had to learn to use digital technology in their teaching, and who are endeavouring to develop learning experiences for their digital age pre-service teachers, the cases reveal strategies worthy of consideration. Overall, the chapters illustrate different examples, from a variety of tertiary institutions, of how ICT can be integrated into the learning and teaching experiences of pre-service teachers.

Lim in Chapter 8 considers the implementation and evaluation of a program designed to improve pre-service teacher use of technology in their classroom teaching. He discusses an educational program at Seoul National University, which aims to develop pre-service teacher knowledge and skills to enable them to successfully integrate ICT into their teaching. In a different context, Lane describes the innovative use of digital technologies to promote learning and engagement in
pre-service teacher education courses at Edith Cowan University. She uses two case studies in Chapter 9 to illustrate, firstly, how digital web 2 technologies are integrated into the design of coursework to accommodate pre-service teacher preferred learning styles, and secondly, how podcasts are used to match postgraduate and undergraduate learning needs and styles.

In chapter 10, Halim, Meerah and Modd explore yet another use of ICT in pre-service teacher education at Universiti Kebangsan Malaysia. They present two case studies, one from a Teaching Training Institute and the other from their university, in which electronic portfolios are part of course assessment requirements. As a result of their research, the authors reveal the impact of portfolios on pre-service teacher learning, while outlining issues requiring close attention. In chapter 11, the integration of technology, using a blended approach to teaching and learning, with content and pedagogy in a postgraduate pre-service teacher group is investigated at the Hong Kong Institute of Education by Ng. She reports on the learning experiences in which pre-service teachers were engaged in face-to-face and online activities by referring to quantitative and qualitative data gathered during her research.

The final chapter in this section differs from the previous four, in that it considers the use of ICT to develop reflective practices in an entire pre-service teacher education course at Edith Cowan University. Yardley, Lock and Walsh discuss the development, implementation and evaluation of a professional learning journal as it evolves from print to eportfolio format. They show how pre-service teachers are able to monitor and self-report on their progressive achievement of course outcomes, together with outlining the structures put in place to support this process.

This book has started out by highlighting the urgent need to improve the quality of teachers, especially pre-service teacher programs. The chapters that follow discuss how various TEIs respond or address this need. However, it is often a difficult task for the teacher education program to help pre-service teachers change their underlying beliefs about teaching and learning and equip them with all the competencies that they need to be an effective teacher in school. Even if the beliefs of pre-service teachers have been successfully shifted towards a more constructivist one, the question is whether it will necessarily bring about transformation in their instructional practices. When they enter the real world as classroom teachers, the school culture or/and the pressures of being a practising teacher may nurture or destroy their constructivist pedagogical beliefs. A supportive environment is indeed an important factor in fostering constructivist practices amongst teachers. In such an environment, teachers’ pedagogical beliefs are likely to be reinforced by the consensus of their professional peers and by the expectations of students in their classrooms. At the same time, the professional learning of teachers is a continuum from pre-service through to induction and in-service. TEIs should not feel pressurised to overload the curriculum in order to prepare graduates who are fully competent when they first walk through the school gate. TEIs should instead work closely with schools, and public and private organisations to build the skills of teachers at each stage of their career.
SECTION I: EXAMINING PRE-SERVICE TEACHER EDUCATION
YIN CHEONG CHENG

1. PARADIGM SHIFT IN PRE-SERVICE TEACHER EDUCATION: IMPLICATIONS FOR INNOVATION AND PRACTICE

ABSTRACT

Following in the wake of educational reforms in the Asia-Pacific region, there have been signs of a paradigm shift in school and teacher education towards the third wave since the turn of the 21st century. This chapter aims to point out that in different paradigms the nature of learning and the role of the teacher are completely different; the theory and practice of pre-service teacher education are experiencing a shift towards the new paradigm, with its emphasis on globalization, localization and individualization, contextualized multiple intelligences and life-long professional learning in the process of teacher development. From this new paradigm, the chapter also draws implications for innovation and practice in pre-service teacher education in the Asia-Pacific region.

INTRODUCTION

In facing up to challenges and impacts of globalization, high technology, economic transformation, international competition and local development in the new century, teacher education institutions in the Asia-Pacific region have made numerous educational reforms (Cheng, 2005). In these reforms, teachers and their schools have had to face uncertainties and challenges arising from their internal and external environments. As a consequence, the role of teachers has become more complex. In addition to teaching in the classroom, teachers are required to take up new responsibilities in school management, curriculum planning and development, mentoring new teachers, staff development, school-based action learning projects, and working with parents, outside leaders and professionals (Boles & Troven, 1996; Cheng, Chow & Tsui, 2001; Fessler & Ungaretti, 1994; Murphy, 1995).

How teachers can be prepared to take up these new roles and perform teaching effectively to meet the challenges and expectations from education reforms is crucial to the reform and practice of teacher education and professional development in the Asia-Pacific region (Cheng, Chow & Mok, 2004). This begs the question: what kinds of innovation and change should be made in pre-service teacher education to ensure this preparation?
I have argued elsewhere that educational reforms in many parts of the Asia-Pacific region have experienced three waves/paradigm shifts in the past two to three decades (Cheng, 2001b; 2005) (see Figure 1 below). Each wave/paradigm has had a distinct concept of learning and teaching, which has underpinned educational reforms for improvement, implementation and practice. And each wave of reforms has had implications for pre-service teacher education (see Table 1 below). With reference to this three-wave typology and my past works on teacher education (Cheng, 2006a,b,c; Cheng, Chow & Mok, 2004; Cheng, Chow & Tsui, 2001), this chapter explores the nature of education and pre-service teacher education in each of the three paradigm shifts and draws implications for their innovation and practice in the Asia-Pacific region.

![Figure 1. Three Waves of Educational Reforms.](image)

Adapted from Cheng (2007)

**FIRST WAVE TEACHER EDUCATION**

In the 1980s, following the successful expansion of basic education systems to meet the needs of national economic developments, many policy-makers and educators in the Asia-Pacific region began to pay attention to the improvement of internal processes, including teaching and learning in educational institutions. The aim was to enhance internal effectiveness of educational institutions in achieving planned educational aims and curriculum targets.
Table 1. Paradigm shifts in pre-service teacher education & implications for innovation and practice

<table>
<thead>
<tr>
<th>Nature of education</th>
<th>First Wave Paradigm</th>
<th>Second Wave Paradigm</th>
<th>Third Wave Paradigm</th>
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<tr>
<td></td>
<td>Education is to deliver the planned knowledge, skills and cultural values from teachers and curriculum to students in a relatively stable society</td>
<td>Education is to provide a service to satisfy the needs and expectations of stakeholders in a competitive market</td>
<td>Education is to facilitate multiple and sustainable developments of students and the society in a context of globalization and change</td>
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<th>Nature of learning</th>
<th>First Wave Paradigm</th>
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<td></td>
<td>To receive a set of knowledge, skills and cultural values for survival in an industrial society</td>
<td>To receive a kind of educational services and become competitive in a job market</td>
<td>To develop contextualized multiple intelligence (CMI) and high-level competence for multiple and sustainable developments in a fast changing era</td>
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<th>Role of teacher</th>
<th>First Wave Paradigm</th>
<th>Second Wave Paradigm</th>
<th>Third Wave Paradigm</th>
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<td></td>
<td>As knowledge deliverer or instructor</td>
<td>As educational service provider</td>
<td>As facilitator of multiple &amp; sustainable development</td>
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<th>Conception of teacher effectiveness</th>
<th>First Wave Paradigm</th>
<th>Second Wave Paradigm</th>
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<td>Internal effectiveness: the teacher’s achievement of planned knowledge delivery through his/her teaching and other internal activities</td>
<td>Interface effectiveness: satisfaction of stakeholders with the educational services including education process and outcomes by the teacher; and teacher’s accountability to the school and the public</td>
<td>Future effectiveness: the teacher’s contribution to the multiple and sustainable developments of individuals, the community, and the society for the future</td>
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<th>Aims of pre-service teacher education</th>
<th>First Wave Paradigm</th>
<th>Second Wave Paradigm</th>
<th>Third Wave Paradigm</th>
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<td></td>
<td>To equip prospective teachers with the necessary subject knowledge, professional skills and attitudes for effective knowledge delivery to students</td>
<td>To equip prospective teachers with the necessary knowledge, skills and attitudes for provision of quality services to satisfy stakeholders’ needs</td>
<td>To develop prospective teachers as facilitators who have CMI and high-level professional competence to create unlimited opportunities for students’ learning and multiple and sustainable developments</td>
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<th>Models of pre-service teacher education</th>
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<th>Second Wave Paradigm</th>
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<td>Goal and specification model</td>
<td>Resource-input model</td>
<td>CMI</td>
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<td>Work process model</td>
<td>Stakeholder satisfaction model</td>
<td>Triplization: globalization, localization and individualization</td>
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<td>Absence of problem model</td>
<td>Accountability model</td>
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<th>Aim of innovation in teacher education</th>
<th>First Wave Paradigm</th>
<th>Second Wave Paradigm</th>
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<td>Improvement of delivery of planned professional knowledge, skills and attitudes to prospective teachers in the process of teacher education</td>
<td>Enhancement of satisfaction of stakeholders such as policy-makers, teacher employers, prospective teachers and community leaders with both process and outcomes of teacher education</td>
<td>Creation of unlimited opportunities for professional learning and CMI development of prospective teachers</td>
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In Hong Kong, India, South Korea, Singapore, Taiwan, Malaysia, and mainland China, there were numerous initiatives to improve important factors of internal school processes. Examples are: school management, teacher quality, curriculum design, teaching methods, evaluation approaches, facilities, and environment for teaching and learning (Gopinathan & Ho, 2000; Kim, 2000; Cheng, 2001a; Abdullah, 2001; Rajput, 2001; Tang & Wu, 2000).

There was a strong emphasis on using the benchmarking concept (Bogan & English, 1994) to ensure that the effectiveness of some internal factors was at a certain standard. For example, in Hong Kong, English language teachers were

<table>
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<th>Implications for innovation and practice in pre-service teacher education</th>
<th>Innovation and use of ICT in teacher education are limited, mainly on improving the efficiency of delivery of planned curriculum and professional competence.</th>
<th>Innovation and use of ICT in teacher education are limited, mainly on enhancing stakeholders’ satisfaction and delivery of the necessary knowledge and skills for teacher interface effectiveness.</th>
<th>Innovation and use of ICT are extensive in building up a networked environment for teachers’ individualized, localized and globalized professional learning and CMI development.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Whether innovation through ICT can facilitate paradigm shift in teacher education is not a concern.</td>
<td>Whether innovation through ICT can facilitate paradigm shift in teacher education is not a concern.</td>
<td>Innovation through ICT plays a key role to facilitate paradigm shift in education &amp; teacher education.</td>
</tr>
<tr>
<td></td>
<td>The effectiveness of innovation depends on:</td>
<td>The effectiveness of innovation depends on:</td>
<td>The effectiveness of innovation depends on:</td>
</tr>
<tr>
<td></td>
<td>1. How well the innovation in teacher education and professional learning be organized to deliver the necessary professional knowledge and skills to teachers?</td>
<td>1. How well can the innovation ensure the performance of prospective teachers satisfying the key stakeholders’ expectations and needs?</td>
<td>1. How well can the innovation through ICT globalize, localize and individualize teachers’ professional learning and development?</td>
</tr>
<tr>
<td></td>
<td>2. How well the delivery of professional knowledge and skills to teachers can be ensured through the innovative teaching, learning and field experience of teacher education programs?</td>
<td>2. How well can the innovation ensure the accountability of the teacher education services to the public and stakeholders?</td>
<td>2. How well can the innovation ensure the accountability of the teacher education services to the public and stakeholders?</td>
</tr>
<tr>
<td></td>
<td>3. How well teacher educators’ teaching can be improved through the innovation in a given time period?</td>
<td>3. How well can the innovation enhance the image and reputation of the teacher education institutions?</td>
<td>3. How well can the innovation facilitate and ensure teachers’ professional learning to be sustained as potentially life long?</td>
</tr>
<tr>
<td></td>
<td>4. How well teacher learners can arrive at given professional standards with the support of innovation in the professional qualification examination or certification?</td>
<td>4. How well can the innovation ensure and facilitate the development of teachers’ ability to triplize their professional learning and development?</td>
<td>4. How well can the innovation ensure and facilitate the development of teachers’ ability to triplize their professional learning and development?</td>
</tr>
<tr>
<td></td>
<td>5. How well can the innovation facilitate the development of a CMI pedagogical environment, in which teachers are immersed and inspired to be self actualizing and developing CMI themselves.</td>
<td>5. How well can the innovation facilitate the development of a CMI pedagogical environment, in which teachers are immersed and inspired to be self actualizing and developing CMI themselves.</td>
<td>5. How well can the innovation facilitate the development of a CMI pedagogical environment, in which teachers are immersed and inspired to be self actualizing and developing CMI themselves.</td>
</tr>
</tbody>
</table>
asked to take a benchmark examination in order to show that their English language proficiency had reached a given standard (Coniam, Falvey, Bodycott, Crew & Sze, 2000).

In the first wave, education was assumed to deliver the planned knowledge, skills and cultural values from teachers and curriculum to students in a relatively stable industrial society, and learning was perceived as a process of students receiving a planned set of knowledge, skills and cultural values for their future survival in such a society. Therefore, the role of the teacher was mainly a knowledge deliverer or instructor (Cheng, 2006a, b).

In this line of thinking, teacher effectiveness was mainly teacher internal effectiveness in achievement of planned goals and tasks of knowledge delivery through teaching and other internal activities. Pre-service teacher education in the first wave aimed to equip prospective teachers with the necessary subject knowledge, professional skills and attitudes for effective knowledge delivery to students.

Implications for 1st wave innovations

In the first wave, innovation in teacher education aimed at the technical improvement of delivery of planned professional knowledge, skills and attitudes for prospective teachers. Information and communication technology (ICT) was strongly emphasized in these educational reforms in the Asia-Pacific Region (Cheng, 2005), but it was often limited and superficial.

In the first wave, ICT in teacher education was mainly used as an efficient tool for the storage, transfer and delivery of professional knowledge and skills from teacher educators or central sources to individual teacher learners.

Challenges to 1st wave teacher education

The results of the first wave of reform efforts were often very limited and could not satisfy the increasing needs and expectations of the public in the Asia-Pacific Region (Cheng, 2006b). People began to doubt the effectiveness of the improvement policies and related teacher education initiatives in meeting the diverse needs and expectations of parents, students, employers, policy-makers and the community at large. The new imperatives were: How could education and teacher education be accountable to the public? How were the practices of education and teacher education relevant to the changing demands of the local community? And, in particular, how could the practice of pre-service teacher education meet the market needs of stakeholders or clients? These questions were all concerned with the interface between teacher education and the community. They challenged the existing paradigm of pre-service teacher education and invoked the need for a paradigm shift from the internal perspective to the interface perspective in development of teacher education.
In the 1990s, in response to the accountability concerns of the public, the second wave of educational reforms emerged in the region. This wave emphasized interface effectiveness of educational institutions, typically defined by education quality, stakeholders’ satisfaction, and market competitiveness. Most policy efforts were directed at ensuring the quality and accountability of schools or educational institutions to the internal and external stakeholders (Coulson, 1999; Evans, 1999; Goertz & Duffy, 2001; Headington, 2000; Heller, 2001; Mahony & Hextall, 2000). In some areas of the region, such as Hong Kong, South Korea, India, mainland China, Singapore, and Taiwan, there was a growing trend for quality education or competitive education movements, which emphasized quality assurance, school monitoring and review, parental choice, student coupons, marketization, parental and community involvement in governance, school charter, and performance-based funding. These were policy measures of interface effectiveness assurance that were taken to enhance effectiveness at the interface between educational institutions and the community (Mukhopadhyay, 2001; Mok et al., 2003; Cheng & Townsend, 2000; Mohandas, Meng & Keeves, 2003; Pang et al., 2003).

In the second wave, education was often assumed to provide an educational service to satisfy the needs and expectations of stakeholders in a competitive market, and learning was a process of students receiving educational services and becoming competitive in a job market. The role of the teacher was an educational service provider and, therefore, teacher effectiveness mainly referred to interface effectiveness that was defined as satisfaction of stakeholders with the educational services (including education process and outcomes) and the teachers’ accountability to the school and the public. In this line of thinking, the purpose of pre-service teacher education was to equip prospective teachers with the necessary knowledge, skills and attitudes for provision of quality services to satisfy stakeholders’ needs.

**Implications for 2nd wave innovations**

In the second wave, innovation in teacher education aimed to enhance the satisfaction of stakeholders, including policy-makers, teacher employers, prospective teachers and community leaders with the process and outcomes of the teacher education programs. Innovations in teacher education were often limited, focusing mainly on enhancing stakeholders’ satisfaction and delivery of the necessary knowledge and skills for teacher interface effectiveness. Similar to the first wave, ICT was generally believed as an important tool for educational reforms. However, in the second wave, the effectiveness of an innovation in teacher education depended on whether it could satisfy the key stakeholders’ expectations/needs and/or the accountability measure and thereby enhance the image and reputation of the teacher education institutions.
Challenges to the 2nd wave teacher education

At the turn of the millennium, rapid globalization, the long-lasting effects of information technology (IT), the drastic shock of the economic downturn, and strong demands for economic and social developments in international competition stimulated deep reflection about the 2nd wave of educational reforms and teacher education in the Asia-Pacific region (Ramirez & Chan-Tiberghien, 2003; Keeves, Njora & Darmawan, 2003). Policy-makers and educators have had to think of ways to reform curriculum, pedagogy, and teacher education and to prepare young people to more effectively cope with the fast-changing environment of the future. In such a context, most policy-makers and educators began to doubt whether the second wave of education and teacher education could meet the challenges in the new era of globalization, IT, and knowledge-based economy. They were concerned about whether interface effectiveness of education in general and teachers in particular were relevant to the future development of students and society. To some extent these doubts and concerns precipitated a further paradigm shift in school and pre-service teacher education (Cheng, 2006b,c).

THIRD WAVE TEACHER EDUCATION

To ensure that the younger generation can meet the challenges and needs of globalization and IT, researchers, policy-makers, and stakeholders in the Asia-Pacific region have urged a paradigm shift in learning and teaching (Ramirez & Chan-Tiberghien, 2003; Burbules & Torres, 2000; Cheng, 2000a, b, 2003a; Daun, 2001; Stromquist & Monkman, 2000). In this emerging third wave of educational reforms, there is a strong emphasis on the relevance of education for the future development of individuals and their society. In particular, this relevance pertains to multiple intelligences (CMI), globalization, localization, and individualization (Maclean, 2003; Baker & Begg, 2003; Cheng, 2005).

As a result of globalization and international competition, this third wave of educational reforms is often driven by the notion of world-class education movements. It is thought that effectiveness and improvement of education should be defined by world-class standards and global comparability to ensure that the future developments of students and societies are sustainable in such a challenging era of globalization and competition.

In the third wave, education serves to facilitate multiple and sustainable developments of students and the society; and learning is considered as a process whereby students develop their contextualized multiple intelligence (CMI) and high-level competence for multiple and sustainable developments in a fast changing era. Therefore, the role of the teacher is a facilitator of students’ multiple and sustainable developments (Cheng, 2005, 2006b). Teacher effectiveness refers to teachers’ future effectiveness, that is, teachers’ contributions to the future developments of individuals, the community, and the society.
It follows that the development of pre-service teacher education in the Asia-Pacific region, and in other parts of the world, has shifted to support the pursuit of this new vision and aims of education, such as lifelong learning, high level abilities for sustainable development, global networking, international outlook, and integration of IT in education (Pefianco, Curtis & Keeves, 2003; Peterson, 2003; Cheng, 2001a). The new aims of pre-service teacher education reflect the perceived need to develop teachers to be facilitators who create unlimited opportunities for students’ learning and multiple and sustainable developments through “triplization in education”, that is, as an integrative process of globalization, localization and individualization in education (Cheng, 2005).

**Paradigm shifts in learning and teaching**

I have argued elsewhere that current paradigms of education have shifted from the traditional site-bounded paradigms of the first and second waves to a new triplization paradigm of the third wave (Cheng 2002a, b). As stated above, the new paradigm emphasizes the development of students’ contextualized multiple intelligences (CMI) (including technological, economic, social, political, cultural, and learning intelligences) and the processes of triplization (including globalization, localization and individualization) in education. As shown in Table 2 below, the characteristics of learning in the new paradigm are completely different from the traditional paradigm. I will now summarize the two paradigms. Please note that each is written in the present tense to signify that in some countries the first paradigm has not been superseded by the second; in other words both paradigms are still in existence in parts of the Asia-Pacific region.

**Traditional paradigm of site-bounded learning.** In the traditional thinking, students’ learning is part of the reproduction and perpetuation process of the existing knowledge and manpower structure to sustain developments of the society, particularly in the social and economic aspects. In traditional education, students are the followers of their teachers. The students go through standard programs of education in which they are taught in the same way and same pace even though their ability is different. Individualized programs seem to be unfeasible. The learning process is characterized by students absorbing certain types of knowledge from their teachers. Learning is a disciplinary, passive, and socializing process such that close supervision and control on the learning process is necessary. The focus of learning is on how to gain professional or academic knowledge and skills. Learning is often perceived as hard working to achieve external rewards and avoid punishment.

In this context all learning activities are school-bounded and teacher-based. Students learn from a limited number of schoolteachers and their prepared materials. Therefore, teachers are the major source of students’ knowledge and learning. Students learn the standard curriculum from their textbooks and related materials assigned by their teachers, are often arranged to learn in a separated way,
and are kept responsible for their own learning outcomes. Thus they have few opportunities to mutually support and learn from each other, and their learning experiences are mainly divorced from the fast-changing local and global communities. Learning happens only in schools within a given time frame. For some students, graduation marks the end of their learning.

**New Paradigm of Triplized Learning.** In the new paradigm, learning should be borderless and characterized by individualization, localization, and globalization. The students are at the centre of education, with their learning facilitated to meet their needs and personal characteristics, and develop their potential. Individualized and tailor-made programs (including targets, content, methods, and schedules) for different students are necessary and feasible. It is believed that students can be self-motivated and self-learn with appropriate guidance and facilitation, and learning is a self-actualizing, discovering, experiencing, and reflecting process. Since information and knowledge can be accumulated in an unbelievable speed but outdated very quickly, it does not make sense to prioritise the acquisition of skills and knowledge, particularly when knowledge and information is easily accessed from information technology, such as the Internet. Therefore, the focus of learning is on learning how to learn, research, think, and create. In order to sustain life-long learning, teachers need to facilitate learning that is enjoyable and self rewarding (Mok & Cheng, 2001).

*Table 2. Paradigm shift in learning*

<table>
<thead>
<tr>
<th>New paradigm of triplized learning</th>
<th>Traditional paradigm of site-bounded learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individualized learning:</strong></td>
<td><strong>Reproduced learning:</strong></td>
</tr>
<tr>
<td>• Student is the centre of education</td>
<td>• Student is the follower of teacher</td>
</tr>
<tr>
<td>• Individualized programs</td>
<td>• Absorbing knowledge</td>
</tr>
<tr>
<td>• Self-learning</td>
<td>• Receiving process</td>
</tr>
<tr>
<td>• Self-actualizing process</td>
<td>• Focus on how to gain</td>
</tr>
<tr>
<td>• Focus on how to learn</td>
<td>• External rewarding</td>
</tr>
<tr>
<td>• Self-rewarding</td>
<td></td>
</tr>
<tr>
<td><strong>Localized and globalized learning:</strong></td>
<td><strong>Institution-bounded learning:</strong></td>
</tr>
<tr>
<td>• Multiple sources of learning</td>
<td>• Teacher-based learning</td>
</tr>
<tr>
<td>• Networked learning</td>
<td>• Separated learning</td>
</tr>
<tr>
<td>• Life-long and everywhere</td>
<td>• Fixed period and within institution</td>
</tr>
<tr>
<td>• Unlimited opportunities</td>
<td>• Limited opportunities</td>
</tr>
<tr>
<td>• World-class learning</td>
<td>• Site-bound learning</td>
</tr>
<tr>
<td>• Local and international outlook</td>
<td>• Mainly institution-based experiences</td>
</tr>
</tbody>
</table>
Furthermore, students’ learning should be facilitated in such a way that local and global resources, support, and networks can be harnessed to maximize the opportunities for their developments during the learning process. Thus through localization and globalization there are multiple sources of learning, students can learn inside and outside their schools, and students are not limited to a small number of teachers in their schools. Participation in local and international learning programs can help them achieve a community and global outlook and experiences beyond schools. Moreover, this learning can be networked locally and internationally. Each student can belong to a group of life-long partner students in different corners of the world, who share their learning experiences.

When education is conceived as life-long learning and discovery (Mok & Cheng, 2001), learning opportunities are unlimited. Students can maximize the opportunities for their learning from local and global exposures through Internet, web-based learning, video-conferencing, cross-cultural sharing, and different types of interactive and multi-media materials (Ryan, Scott, Freeman, & Patel, 2000; Education and Manpower Bureau, 1998). Students can learn from world-class teachers, experts, peers, and learning materials from different parts of the world. In other words, their learning can be world-class learning.

The paradigm shift in learning implies a paradigm shift in teaching as summarized in Table 3 below (Cheng, 2001b). The teaching of the new paradigm is very different from the traditional one. Teaching is considered to be a process to initiate, facilitate, and sustain students’ self-learning, self-exploration and self-actualization; therefore, teachers need to be facilitators and mentors who support students’ learning. The focus of teaching in the new paradigm is to arouse students’ curiosity and motivation to think, act, and learn. Also, teaching is an act of sharing with students the joy of the learning process and outcomes. To teachers themselves, teaching is also a life-long learning process involving continuous discovery, experimentation, self-actualization, reflection, and professional development. Of course teachers have their own potential and characteristics and need to teach in different styles to maximize their unique contributions.

Through localization and globalization, there are multiple sources of learning; for example, there are self-learning programs and packages, web-based learning, outside experts, and community experiential programs inside and outside their institutions, locally and globally. Teachers can encourage local and global networking and exposure through the Internet, web-based teaching, video-conferencing, cross-cultural sharing, and different types of interactive and multi-media materials (Ryan, Scott, Freeman, & Patel, 2000; Education and Manpower Bureau, 1998). Through participation in local and international development programs, teachers can achieve global and regional outlook and experiences beyond schools. This too is networked. Teachers are grouped and networked locally and globally to develop and sustain a new professional culture and multiply their teaching effects through mutual sharing and inspiring. They become world-class and networked teachers.
## Table 3. Paradigm shift in teaching

<table>
<thead>
<tr>
<th>New paradigm of triplized teaching</th>
<th>Traditional paradigm of site-bounded teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individualized teaching:</strong></td>
<td><strong>Reproduced teaching:</strong></td>
</tr>
<tr>
<td>• As facilitator: teacher is the facilitator or mentor to support students’ learning</td>
<td>As centre: teacher is the centre of education</td>
</tr>
<tr>
<td>• Contextualized multiple intelligence teacher</td>
<td>• Partially competent teacher</td>
</tr>
<tr>
<td>• Individualized teaching style</td>
<td>• Standard teaching style</td>
</tr>
<tr>
<td>• Arousing curiosity</td>
<td>• Transferring knowledge</td>
</tr>
<tr>
<td>• Teaching as facilitating process</td>
<td>• Teaching as delivery process</td>
</tr>
<tr>
<td>• Sharing joy</td>
<td>• Achieving standard</td>
</tr>
<tr>
<td>• Teaching as life-long learning</td>
<td>• Teaching as a practice of previous knowledge</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Localized and globalized teaching:</strong></th>
<th><strong>School-bounded Teaching:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Multiple sources of teaching</td>
<td>• Limited and bounded teaching</td>
</tr>
<tr>
<td>• Networked teaching</td>
<td>• Separated teaching</td>
</tr>
<tr>
<td>• World-class teaching</td>
<td>• Site-bounded teaching</td>
</tr>
<tr>
<td>• Unlimited opportunities in teaching</td>
<td>• Limited opportunities in teaching</td>
</tr>
<tr>
<td>• Teaching with local and international outlook</td>
<td>• Teaching providing mainly school experiences</td>
</tr>
<tr>
<td>• As world-class and networked teacher</td>
<td>• As school-bounded and separated teacher</td>
</tr>
</tbody>
</table>

In an empirical study Cheng and Mok (2007) found that the paradigm shift in teaching and learning was correlated with 18 indicators of students’ learning in a sample of 26 Hong Kong secondary schools involving 7,063 students. As shown in Table 4 below, most Pearson coefficients between the paradigm shifts in teaching and learning and the indicators of students’ learning are in a range of 0.406 to 0.763 at the 0.05 or 0.01 significant level. This study found that the more a school was in paradigm shift towards globalized, localized and individualized learning and teaching, the more its students had positive attitudes towards their learning, applied various methods and ways to enhance their learning, gained learning experiences and opportunities to perform self-reflection and self-directed learning, experienced contextualized multiple thinking including technological thinking, economic thinking, social thinking, cultural thinking and learning thinking in learning activities, and felt satisfied with the opportunities to grow and perform in the school. These findings supported the hypothesis that paradigm shifts in teaching and learning towards the new paradigm of third wave are important to students’ active, effective and sustainable learning for the future.
Table 4. Paradigm shift towards triplization as related to students’ learning  
(Pearson correlation coefficients)

<table>
<thead>
<tr>
<th>Paradigm shift in learning</th>
<th>Paradigm shift in teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive learning attitudes</td>
<td>.436(*)</td>
</tr>
<tr>
<td>Application of various learning methods</td>
<td>.435(*)</td>
</tr>
<tr>
<td>Learning effectiveness</td>
<td>.704(**)</td>
</tr>
<tr>
<td>Learning facilitation</td>
<td>.562(**)</td>
</tr>
<tr>
<td>Self-reflection</td>
<td>.621(**)</td>
</tr>
<tr>
<td>Self-directed learning</td>
<td>.630(**)</td>
</tr>
<tr>
<td>Learning opportunity</td>
<td>.759(**)</td>
</tr>
<tr>
<td>Multiple thinking in learning</td>
<td>.725(**)</td>
</tr>
<tr>
<td>Technological thinking</td>
<td>.630(**)</td>
</tr>
<tr>
<td>Economic thinking</td>
<td>.611(**)</td>
</tr>
<tr>
<td>Social thinking</td>
<td>.569(**)</td>
</tr>
<tr>
<td>Political thinking</td>
<td>.603(**)</td>
</tr>
<tr>
<td>Cultural thinking</td>
<td>.500(**)</td>
</tr>
<tr>
<td>Learning thinking</td>
<td>.566(**)</td>
</tr>
<tr>
<td>Students’ satisfaction</td>
<td>.463(*)</td>
</tr>
<tr>
<td>Intrinsic satisfaction</td>
<td>.386 .444(*)</td>
</tr>
<tr>
<td>Extrinsic satisfaction</td>
<td>.447(*)</td>
</tr>
<tr>
<td>Social satisfaction</td>
<td>.497(**)</td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>.406(*)</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).  
** Correlation is significant at the 0.01 level (2-tailed).  
n=26 schools

Third wave model of pre-service teacher education

With paradigmatic changes in the role of teachers from the first and second waves to the third wave, inevitably, there is a paradigm shift in pre-service teacher education from the internal and interface models within the site-bounded paradigm towards to a future model with emphasis on contextualized multiple intelligence and triplization in teacher education as summarized in Table 5 below (Cheng, 2006b,c): (Table 5)

New aims for pre-service teacher education

Traditionally, pre-service teacher education aims to equip prospective teachers with the necessary competence to deliver knowledge and skills for students to meet the manpower/social needs of stakeholders in economic and social developments. But with the triplization paradigm, the aims of new pre-service teacher education are to develop prospective teachers as triplized life-long learning teachers who would creatively contribute to students’ triplized life-long learning and development as a CMI citizen of the society and world.
### Table 5. Paradigm shift in pre-service teacher education

<table>
<thead>
<tr>
<th>New paradigm of triplized teacher education (3rd wave)</th>
<th>Traditional Paradigm of site-bounded teacher education (1st wave &amp; 2nd wave)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aims of the new teacher education</strong>&lt;br&gt;To develop teachers as triplized CMI and life long learning teachers who will creatively contribute to development of students’ triplized life-long learning as a CMI citizen of a CMI society and a CMI global village with multiple developments</td>
<td><strong>Aims of the traditional teacher education</strong>&lt;br&gt;To equip teachers with the necessary competence to deliver knowledge and skills to students such that students can survive a local community or meet the manpower/social needs of stakeholders in the economic and social developments</td>
</tr>
<tr>
<td><strong>New teacher education curriculum</strong>&lt;br&gt;- CMI &amp; triplization-focused curriculum&lt;br&gt;- Triplized curriculum structure: The structure is often hybrid, integrative, and interactive with the support of IT networking, local and global exposure, and field experience and virtual reality.&lt;br&gt;- World-class and globalized curriculum&lt;br&gt;- Localized curriculum&lt;br&gt;- Individualized curriculum</td>
<td><strong>Traditional teacher education curriculum</strong>&lt;br&gt;- Subject-focused curriculum&lt;br&gt;- Standard subject curriculum structure:&lt;br&gt;- The structure is often linear, step by step, and subject dependent.&lt;br&gt;- Subject-bounded curriculum</td>
</tr>
<tr>
<td><strong>New teacher education pedagogy</strong>&lt;br&gt;- Facilitating teachers’ life-long professional learning&lt;br&gt;- Multiple sources of teacher learning&lt;br&gt;- Globally and locally networked teacher learning&lt;br&gt;- ICT pedagogical environment including:&lt;br&gt; 1. World-wide networking through internet&lt;br&gt; 2. Web-site learning&lt;br&gt; 3. Interactive self learning&lt;br&gt; 4. Multimedia facilities and learning materials&lt;br&gt; 5. Video conferencing for local and international sharing and exposure&lt;br&gt;- Boundless and unlimited opportunities for learning inside and outside teacher education institution</td>
<td><strong>Traditional teacher education pedagogy</strong>&lt;br&gt;- Delivering knowledge and skills to teachers&lt;br&gt;- Site-bounded teacher learning&lt;br&gt;- Separated teacher learning&lt;br&gt;- Absence of IT, classroom-bounded pedagogical environment&lt;br&gt;- Limited opportunities for learning, fixed period, within teacher education institution</td>
</tr>
<tr>
<td><strong>Pedagogy is based on Pentagon theory of CMIs development</strong></td>
<td><strong>Pedagogy lacks a clear linkage with CMIs development and it is often driven by the delivery of subject knowledge and external standards in examinations</strong></td>
</tr>
</tbody>
</table>
New curriculum for pre-service teacher education

CMI/triplization-focused curriculum: In the traditional paradigm, the focus of the curriculum is on the content and delivery of subject knowledge. The structure of a curriculum is mainly based on the structure of subject knowledge and the needs for standard contents and arrangements for the subject teacher group. Therefore, the curriculum is often linear, step-by-step, and subject dependent. By contrast, the new paradigm focuses the design of curriculum on developing teachers’ CMI and ability to make triplization for their own teaching and professional learning, students’ learning and development, and the school’s development. Therefore, the design is based on characteristics of development of CMI and maximizing development opportunities for teachers’ individualized, localized, and globalized learning and teaching. The curriculum structure is often hybrid, integrative, and interactive with the support of IT, networking, local and global exposure, and field experience and virtual reality.

World-class and globalized curriculum: The new curriculum content of pre-service teacher education should be world-class and globalized, pooling up the world-class materials and designs for learning and teaching and maximizing global relevance and exposure in different development areas. The content is also related to technological, economic, social, political, cultural, and learning globalization. Whether it is subject-based is not the major concern.

Localized curriculum: The new curriculum also includes local resources, materials and concerns to ensure the local relevance and community involvement to maximize opportunities for pre-service teachers’ localized learning and teaching. School-based/community-based teacher education maximises local relevance and support in the field. Technological, economic, social, political, cultural, and learning localization are also important areas of pre-service teacher education curriculum.

Individualized curriculum: The new curriculum is flexible and adaptable in terms of learning targets, content, methods, and schedules to meet the developmental needs of individual teachers, facilitate their self learning and actualization, and optimize their potential as triplized CMI teachers.

New pedagogy for pre-service teacher education

The traditional pre-service teacher education emphasizes delivering subject knowledge and professional skills to prospective teachers. As stated above, the pedagogy frames teachers’ learning as a disciplinary, passive, and socializing process and assumes that close supervision is necessary during the training process. The opportunities for traditional teacher learning are often very limited, in a fixed period, and within an institutional bounded or site-bounded but IT-absent environment. Also, the pedagogy has no clear linkage with development of teachers’ CMI, and it is often driven by the delivery of subject knowledge and external standards in examinations. In contrast to the traditional paradigm, the new pedagogy has the characteristics outlined in Table 5 above:
Facilitating teachers’ life-long learning: The new pedagogy views teachers’ learning as a self-actualizing, discovery, experiential, enjoyable, and reflective process. However, the facilitative role of teacher educators and pre-service teachers’ own motivation and self-reward are crucial to this self-learning process.

Multiple sources of teacher learning: In addition to the teacher education institution itself, there are multiple sources of teacher learning; for example, self-learning programs and packages, interactive multi-media materials, web-site learning, outside experts, community experiential programs, etc. inside and outside the institution, locally and globally. Through different types of partnership and collaboration, schools, local, and overseas organizations, institutions and communities, including social services, business, and industry, are actively involved in the pre-service teacher education programs.

Globally and locally networked teacher learning: Teacher learning is locally and globally networked through, for example, the Internet, e-communications, visiting programs, local and global exchange programs, and sharing by video-conferencing. The networked learning can and should provide a wide spectrum of learning experiences and maximize opportunities for student teachers to benefit from various settings and cultures. With the help of globalized learning, student teachers can learn world-class experiences from different parts of the world and various cultural settings. Therefore, the opportunities for pre-service teachers can be maximized to enhance the quality of their learning and teaching from local and global networking and exposure. In the new triplization paradigm, teacher education institutions are conceptualized as world-class and networked learning organizations.

World-wide IT pedagogical environment: In order to make triplizing teacher education possible, it is necessary to build up a world-wide IT pedagogical environment for teacher learning. It should include some typical and important components, such as world-wide networking through the Internet, web-site learning, interactive self-learning, multi-media facilities and learning materials, and video-conferencing for local and international sharing and exposure. Through this environment, boundless and unlimited opportunities can be provided to teachers’ learning inside and outside teacher education institutions and schools.

Based on CMI development: Above all, the pedagogy should encourage teachers’ CMI development and facilitate intelligence transfer among learning, economic, political, social, cultural, and technological intelligences. Also, developing teachers’ learning intelligence should be the core part of pre-service teacher education. Prospective teachers should be facilitated to learn how to learn, think, and create, particularly in the local and global contexts. Teacher educators themselves should set a CMI model for facilitating and stimulating teachers’ self-learning. Teacher education institutions should become a CMI pedagogical environment, in which student teachers are immersed and inspired to be self-actualizing and developing in CMI. Team/group learning, open-ended learning projects, problem-based learning, and integrative and thematic learning are typical examples of pedagogic approaches in the new pre-service teacher education.
Implications for the 3rd wave innovation

In the line with the new paradigm of the third wave, innovations in pre-service teacher education aim at creating unlimited opportunities for professional learning and CMI development of prospective teachers. Teacher education institutions in the Asia-Pacific region and other parts of the world should endeavour to make extensive innovations to facilitate the paradigm shift in pre-service teacher education and build up a networked environment for teachers’ individualized, localized and globalized professional learning and CMI development.

In the third wave, the effectiveness of innovations in pre-service teacher education depends on a number of factors related to the following questions:

– How well can the innovation through ICT globalize, localize and individualize student teachers’ professional learning and development?
– How well can the innovation maximize student teachers’ professional learning opportunities through establishing the borderless ICT environment, local and international networking, and various types of innovative learning programs?
– How well can the innovation facilitate and ensure that student teachers’ professional learning is sustained and life long?
– How well can the innovation ensure and facilitate the development of student teachers’ ability to triplize their professional learning and development?
– How well can the innovation facilitate the development of a CMI pedagogical environment in which student teachers are immersed and inspired to be self-actualized and able to develop CMI themselves?

CONCLUSION

The three waves of education reforms in different parts of the Asia-Pacific Region and beyond entail different types of teacher effectiveness: internal effectiveness, interface effectiveness and future effectiveness, which are based on completely different paradigms in education. Correspondingly, the major characteristics of three waves of pre-service teacher education and their innovations are different.

The first wave of education reform emphasizes internal improvement and effectiveness of schools. Therefore, the paradigm of pre-service teacher education conceptualizes teacher effectiveness mainly as the internal effectiveness of teaching and work to achieve the planned school goals. The innovations in teacher education are often short-term, relating to improvement in delivery of planned professional knowledge, skills and attitudes to prospective teachers. There is a lack of systematic application of ICT.

The second wave of education reform focuses on the interface between the school and the community. The concept of teacher interface effectiveness is to provide education services that satisfy the needs of stakeholders and are accountable to their schools and the public. Innovations in the second wave of teacher education focus mainly on enhancement of satisfaction of stakeholders such as policymakers, teacher employers, prospective teachers and community leaders.
The third wave of education reform represents a paradigm shift towards school future effectiveness, which is relevant to the future needs and sustainable developments of individuals and the society. Therefore, the focus of teacher future effectiveness is on ensuring the relevance of aims, content, practices, and outcomes of teacher work to the multiple and sustainable developments for the future. The third wave of pre-service teacher education uses a future model with emphasis on CMI and triplization, aiming at creating unlimited opportunities for teachers’ continuous life-long learning and development with the support of networked human and ICT environment. As opposed to the first and second waves, the third wave pre-service teacher education in the Asia-Pacific region should have extensive innovations with the application of ICT in building up a networked environment for teachers’ individualized, localized and globalized professional learning and CMI development. Innovation with ICT plays a key role in ensuring the paradigm shift in pre-service teacher education.

Although teachers’ internal effectiveness, interface effectiveness, and future effectiveness are based on different paradigms and they have different strengths and focuses, all of them can co-exist and, arguably, can still make a contribution to the practice of pre-service teacher education in the new century. They can be mutually supplementary to each other, taking internal improvement, interface satisfaction and accountability, and future relevance into consideration. I believe that pre-service teacher education should facilitate prospective teachers to perform internal effectiveness, interface effectiveness, and future effectiveness for their schools. This would provide the new generation of teachers total teacher effectiveness.

I hope that the analysis in this chapter provides a new comprehensive framework for local and international educators, researchers, and policy-makers to develop new teachers and conduct innovations in pre-service teacher education for the future.

Note: Parts of materials in this chapter were adapted from the author’s keynote speeches and article Cheng (2006a, b, c).

Acknowledgment: The author would like to acknowledge the support of the Competitive Earmarked Research Grant awarded by the Research Grants Council of University Grants Committee of the Hong Kong SAR Government to their research project (HKIEd8003/03H) that contributed partly to development of this chapter.

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PARADIGM SHIFT IN PRE-SERVICE TEACHER EDUCATION


Yin Cheong Cheng
Hong Kong Institute of Education, Hong Kong
2. THE STATE OF PRE-SERVICE TEACHER EDUCATION IN THE ASIA-PACIFIC REGION

ABSTRACT

This chapter examines current and past contexts of teacher education in the Asia-Pacific region. By focusing on how partnerships between major stakeholders can assist the development of future teachers, the issue of globalisation is considered at both a local and an international perspective. A series of case studies is presented to illustrate recent trends in teacher education, especially components such as curriculum, assessment, professional experience (practicum), teacher educators, and learning and teaching strategies. These case studies illustrate how the ideas and practices associated with effective teaching have developed, and how teacher education requires high levels of connection, understanding and negotiation between all levels of society. The chapter concludes by identifying some gaps that appear to have formed within the pre-service teacher education landscape and outlines some recommendations for addressing these gaps.

INTRODUCTION

In the context of rapid technological and economic developments globally, there is a perception that schools in the Asia-Pacific region should prepare students who are adaptable to change, who are creative and innovative, who are able to apply knowledge and solve problems with confidence. It follows that a major educational challenge for nations is to prepare teachers who can produce these desired student attributes, and teachers who are open to new ideas, new practices and technologies. One line of thought is that such teachers need to become mediators and knowledge brokers in order to provide guidance, strategic support, and assistance to help students to assume responsibilities for their own learning (Cochran-Smith & Zeichner, 2005).

In this chapter we review the literature on pre-service teacher education in the Asia-Pacific region, with a particular interest in how teacher education institutions (TEIs) can better respond to and meet the requirements of their education system. We begin by examining the notion of this fit between TEIs and their education system, and of the concept of globalisation; then we identify the components of pre-service education programs and begin to consider how these components might meet the needs of the education system. Next, we present a series of case studies of how attempts have been made in TEIs in the Asia-Pacific to improve these
components. Finally, we identify and analyse some of the remaining gaps in pre-service teacher education and reflect on how they may be addressed.

SITUATING PRE-SERVICE TEACHER EDUCATION IN ITS EDUCATION SYSTEM

Whereas there is considerable variation in pre-service teacher education programs in the Asia-Pacific region, most of these programs aim to build teachers’ subject and pedagogical knowledge and develop teaching strategies and awareness of how learners learn (Mullock, 2003). Feiman-Nemser (2001) identifies the central tasks of a pre-service teacher education program as:

- analyse beliefs and form new visions
- develop subject matter knowledge for teachers
- develop understanding of learners and learning
- develop a repertoire for beginning teachers
- develop the tools to study teaching

Skilbeck and Connell (2003) identify similar tasks, but include “develop pedagogical and content knowledge” and “provide opportunities for practising and planning”. Presumably the latter aims to address the gap between theory and practice, and to enable pre-service teachers to integrate their pedagogical knowledge with their subject knowledge. Both formulations imply that pre-service teacher education programs need to be responsive to the needs of their (school) education system. And if the responsibility for this responsiveness is to be shared by TEIs and the education system, this becomes the basis for a partnership, as articulated by Sharp and Turner (2007, p. 1):

The challenge to create genuine university-school partnerships around teacher education work is critical to provide opportunities for prospective teachers to learn in the context of practice where all stakeholders work with shared purpose, mutuality of engagement, a negotiated repertoire and common goal.

The aforementioned Australian House of Representatives report (2007) also recognises that partnerships between TEIs and school systems can improve practicum placements for pre-service teachers and ensure relevance of the pre-
service curriculum for schools. Along with other TEIs in the Asia-Pacific region, Australia’s Edith Cowan University has endeavoured to work with schoolteachers and stakeholders from different education systems (State Government, Catholic and Independent) in the design of its pre-service teacher education program (Krieg & Sharp, 2006 – see the case study below; see also the chapter by Lock and Yardley in this book).

To sum up: TEIs in the region are increasingly mindful that they must be responsive to the needs of their education system. These needs include the recruitment of teachers, professional development, and retention of teachers in the workforce. Of course these needs change considerably over time, not least with the onset of globalisation.

By the term ‘globalisation’ we mean the tendency for businesses and other organisations to operate on a global scale (Concise Oxford Dictionary, 2006), which has put the onus on schools and TEIs to address issues like cultural diversity and global warming (Davis, 1999; de Guzman, de la Rosa, & Arcangel, 2005). In the Asia-Pacific region, some countries are in a better position to finance such revision and refinement of their pre-service teacher education programs than others. In a study conducted to examine the impact of globalisation on education from a Philippine perspective, the majority of the professors and teachers interviewed identified lack of finance as a major problem in responding to globalisation (de Guzman et al., 2005).

Another impact of globalisation has been the emphasis placed on lifelong learning skills. Coolihan (2002, p. 4) describes the need for lifelong learning in teacher education as being “never more urgent”, which translates into the need for ongoing professional development to ensure that teachers have the skills necessary to both seek out and implement new knowledge in order to respond to society’s ongoing and changing requirements. Mayer (2006, p. 63), in her discussion of the changing face of teaching due to globalisation, asserts that “because of the rapid rate of change, there is a general consensus that undergraduate education is only the start of a continuum of lifelong learning work”. Indeed, some educationists believe that pre-service teacher education is only the beginning of a teacher’s career rather than the complete qualification. According to Feiman-Nemser (2001), a teacher’s career may be divided into three stages: pre-service teacher education, induction as a beginning teacher into the teaching profession, and in-service professional learning – with each stage building upon the knowledge and skills developed in the previous stage.

An offshoot of partnerships between TEIs and school systems has been the realisation of the benefits of aligning the objectives of pre-service teacher education programs with the objectives of in-service professional development of teachers in order to bring about convergence in thinking and subsequent change in schools (Waghorn & Stevens, 1996). This close nexus between those involved in pre-service and in-service teacher education is also championed by Krieg and Sharp (2006), who document a case where a university works closely with a group of schools to ensure that pre-service and in-service teacher education are mutually supportive.
COMPONENTS OF PRE-SERVICE TEACHER EDUCATION

Cochran-Smith & Zeichner (2005) regard the key components of pre-service teacher education programs to be: curriculum, assessment, professional experience (practicum), teacher educators, and learning and teaching strategies. We will describe each of these in turn.

Curriculum

The term ‘curriculum’ is used variously. Some use the term narrowly to mean only what is taught; others define it broadly to include what, how and even where teaching and learning occur. The manner in which the curriculum is designed also has a marked impact on the quality of the curriculum. According to Hoban (2004, p. 121), the curriculum design should “prepare teachers for coping with the nature of their work and how to think about it”. Also, the design is influenced by the structure of the organisation in which it is implemented. Some TEIs take a program approach to curriculum design, whereas others take a faculty/discipline approach. The former emphasises the various education programs (early childhood, primary or secondary) that it offers to the students; the latter structures staff according to their teaching discipline (educational psychology, educational technology, science, the arts). No doubt there are advantages and disadvantages in each approach. Goos and Moni (2001) claim that a program approach provides a more holistic curriculum and one that provides greater collaboration, and a more efficient use of resources. However, it could be argued that the program approach may result in competition for both students and resources between programs within the organisation.

Arguably, the curriculum in TEIs involves developing the skills, attitudes and knowledge that make up the core competencies of an effective teacher. These competencies would include pedagogical knowledge, subject knowledge, knowledge of social and cultural contexts and the development of values and beliefs, which are often stipulated as essential by teacher registration boards, education departments and employing authorities. Central to this curriculum is the expectation that pre-service teachers develop effective (‘state of the art’) teaching strategies but also, through their acquisition of lifelong learning skills, have the ability to seek out new strategies (Coolihan, 2002; Darling-Hammond & Baratz-Snowden, 2007; Mayer, 2006). Clearly, our understanding of ‘curriculum’ has also been influenced by globalisation (de Guzman et al., 2005).

Assessment

The need for ‘authentic’ assessment is often invoked in TEIs. According to Darling-Hammond and Snyder (2007, p. 524), authentic assessment comprises “opportunities for developing and examining teachers’ thinking and actions in situations that are experience based and problem oriented and that include or simulate actual acts of teaching”. Examples of such types of assessment include: action research, portfolios, case studies and peer assessment. In their work on
situated learning, Herrington and Oliver (2000, p. 23) also expound the value of authentic learning strategies in pre-service teacher education contexts in order to “address the growing rift between formal school learning and real-life learning”.

The assessment of pre-service teachers’ professional practice varies amongst TEIs in the Asia-Pacific region. In some institutions, the judgment is made by the cooperating or mentoring teacher; but in the National Institute of Education (NIE) in Singapore, assessment is carried out by a practicum assessment panel, which goes beyond the cooperating teacher to include another member of the school and a representative of NIE (Wong & Goh, 2002). At the University of Auckland in New Zealand a university trained mentor within each school is responsible for assessment of students in the Postgraduate Diploma in Education (Hope, 1999). These variations largely reflect the philosophy of the institutions involved. For example, the partnership model of practicum at the School of Education in Edith Cowan University devolves the assessment of the pre-service teacher primarily to the cooperating (classroom) teacher, so as to reflect “the shared accountability processes which have led to a shift in power and identity” (Sharp & Turner, 2007, p. 3).

Professional experience (practicum)

The professional experience or practicum is often regarded as the most important component of the pre-service teacher education program (Turner & Sharp, 2006; House of Representatives: Standing Committee on Education and Vocational Training, 2007). Whereas the requirements of the practicum vary in the Asia Pacific region, it is widely acknowledged that the mentor teacher/cooperating teacher/supervising teacher plays a key role in the professional experience of pre-service teachers (except in some countries where teachers are without professional qualifications, and the responsibility remains with the TEI). Atputhasamy (2005) emphasises the importance of adequate support structures for pre-service teachers and their mentor teachers, and suggests that pre-service teachers need most guidance on their teaching of subject content effectively, and on their classroom management.

Teacher educators

Teacher educators also play an important role in building the capacity of pre-service teachers. However, many teacher educators still employ traditional teaching and learning methods in their courses and programs (Berry, 2004), driven by a belief that teaching is the dissemination of information, and learning is a passive activity in which the pre-service teachers do minimal task management and hold little responsibility for their own learning. Brady (2004) contends that constructivist teaching/learning strategies – driven by the belief that learning is an active construction and reconstruction of knowledge, and teaching is a process of guiding and facilitating students in the process of knowledge construction – build pre-service eacher competencies that may be used throughout a teaching career. Brady (2004)
notes that the latter strategies are becoming more relevant in our knowledge societies and economies where students are expected to be active seekers and constructors of knowledge, and their learning involves the discovery and transformation of complex information. We take the position in this chapter that the constructivist approach encompasses the processes of making meaning of concepts and theories and self-regulated learning and personal agency.

No doubt, building relationships and modelling effective teaching are important roles played by teacher educators (Marlow & Nass-fukai, 2000; Sharp & Turner, 2007, 2008). Pre-service teachers have to trust their teacher educators in order to develop confidence in their own teaching, and gain valuable feedback and encouragement about their development as a teacher (Howitt, 2007). Howitt (2007) found that modelling of effective teaching strategies by the teacher educator was one of the biggest influences on the pre-service teachers’ confidence in teaching science (see case study on this topic below).

Teaching and learning strategies

Many teaching and learning strategies are being used in pre-service teacher education programs in the region. As noted above, there has been a shift from a traditional to a constructivist approach. There has also been a propensity towards strategies that are inquiry-based, problem-based, and case-based, with the intention of contextualising/authenticating learning. Such strategies are thought to provide rich opportunities for pre-service teachers to apply theoretically sound ideas about teaching and learning in realistic, complex and authentic educational contexts. The next section of this chapter presents case studies of attempts to enhance or strengthen these components of pre-service teacher education within the Asia-Pacific region.

CASE STUDIES IN THE ASIA-PACIFIC REGION

A holistic approach to teaching science (Curtin University of Technology, Australia)

A holistic approach to teaching Science was taken by Curtin University of Technology with the aim of boosting the confidence of pre-service teachers to teach science (Howitt, 2007). The unit design included six elements: practicum, teacher educators, pedagogical content knowledge, learning environment, assessment, and reflection. The unit comprised a series of workshops over a ten-week period, followed by a three-week practicum experience.

The design of the unit was based on the belief that theory is not enough; pre-service teachers need to observe, apply and reflect. The importance of reflection in developing effective teaching is widely recognised (Giovanelli, 2003). The teacher educators of this course attempted to model effective teaching strategies and build relationships with the pre-service teachers. A constructivist approach was taken and one device to develop reflection was by allocating the last fifteen minutes of
each workshop as reflection time. The assessment of student learning in this course involved lesson planning using current documents from the relevant education system, with a reflective element built into it. This proved to be effective as the assessment processes in the course focused on both the process and product of the students’ learning, providing the pre-service teachers with lessons that they could use in practice. Relevant curriculum documents were used to ensure the authenticity and the meaningfulness of the learning task. This case study by Howitt (2007) illustrates how a more holistic approach can help pre-service teachers to be more prepared to teach Science.

A four-dimensional approach to teacher education design (University of Wollongong, Australia)

The four-dimensional approach by Hoban (2004) supports pre-service teachers’ understanding of the dynamic nature of teaching and emphasises lifelong learning. It may also serve as a conceptual framework for teacher educators in adopting an integrated approach to course design. The four dimensions are:

– **Links across the university curriculum.** This involves a program with a shared goal.

– **Links between schools and university experiences.** This essentially relates to creating greater links between theory and practice. The concept of providing practice prior to the introduction of theory is mentioned; however, no evidence is provided as to which format is more effective.

– **Socio-cultural links between participants.** There should be consistency between what pre-service teachers experience during their professional experience and what is learned at university; for example, a shared vision about the pre-service teacher’s role should be adopted in the school while students are on professional experience.

– **Personal links that shape the identity of teacher educators.** Self study is a way in which this may be achieved; the concept of self study is discussed in more detail in a case study below.

Hoban (2004) acknowledges that there is no one best conceptual framework for pre-service teacher education courses and emphasises the importance of the linkages between the elements of courses. This case study demonstrates the value of a more holistic experience that helps students to bridge the gap between theory and practice.

Portfolios for assessment (Hong Kong Institute of Education, Hong Kong)

Research has shown that portfolios constructed on specific standards may support pre-service teachers’ professional development (Darling-Hammond & Snyder, 1999). Portfolios also provide pre-service teachers with opportunities to reflect on how their competencies have been developing over time and how they may improve upon them. In this case study, portfolios were used as a form of formative and summative assessment for the unit of study on “Classroom teaching skills”.
The pre-service teachers were required to collect and comment on how pieces of work reflected their achievement of particular competencies (Klenowski, 2000). The study sought to determine the effect of portfolios in developing teaching and reflective skills. This was a relatively new concept of assessment, particularly given the history of examination-based assessment in Hong Kong (Klenowski, 2000). The study found that the use of portfolios increased pre-service teacher’s use of more innovative teaching strategies, such as active learning, group work, consistent feedback, videoing, and reflections, and supported pre-service teachers in taking greater responsibility for their own learning. In addition, the students’ use of portfolios had an impact on the pedagogical practice of the teacher educators who implemented them, such as efforts to make expectations clear to the pre-service teachers, which supported their development in a constructive way.

This case study provides a positive example of how portfolios can be used as an assessment tool to improve the quality of pre-service teacher education. However, there were challenges involved in the implementation of such an assessment tool, especially with the need for consistency in the grading of portfolios and clear assessment procedures. Two other chapters in this book, one by Yardley, Lock and Walsh and the other by Halim, Meerah and Yassin, report on portfolio use in teacher education.

**A collaborative approach to the development of criteria and standard-based assessment: (University of Queensland, Australia)**

This case study involved taking a holistic and collaborative approach towards assessment in a teacher education program. The goals of the study, according to Goos and Moni (2001, p. 73), were to “develop coherent and specific sets of criteria and standards for pre-service teacher education subjects, and to offer students assessment tasks that have authentic purposes and practical outcomes”. The study also aimed to provide students with a consistent view of assessment across subject areas. Some of the principles used to guide the design of these assessment tasks included collaboration, a process and product approach, and peer assessment.

The collaborative approach adopted involved teacher educators from two disciplines (mathematics and science) working together to share their ideas and workload (Goos & Moni, 2001). The use of technology facilitated this collaboration. As part of the development of the assessment tasks, the authors prepared detailed criteria and standards, with provisions made for the incorporation of the specific language of each discipline. The authors embraced not only collaboration between the teacher educators but also collaboration between the pre-service teachers through the use of professional development seminars designed to reflect a real life in-service course. The assessment tasks were also designed to reflect both a process and product approach, with some of the seminars presented by the pre-service teachers as part of the assessment task being reported at a professional conference and published in professional journals.

Peer assessment featured in the assessment of the pre-service teachers. The authors, in their discussion of peer assessment, mention some of the benefits of its
use in higher education: “Good assessment practice in higher education acknowledges the value of peer assessment in promoting reflective, autonomous learning and in developing valued personal and professional skills such as teamwork, communication and critical analysis” (Goos & Moni, 2001, p. 81). The pre-service teachers rated the assessment practices favourably because they provided opportunities for them to share resources, and practise making constructive comments about their peers’ work.

This case study illustrates that through the use of collaboration and a more holistic approach in assessment design, significant improvements may be made to pre-service teachers’ learning experiences.

**Collaborative school-university partnership (Edith Cowan University, Australia)**

Based on core principles developed in conjunction with school partners, education system representatives, current students and university educators, the Bachelor of Education (Kindergarten through to Year 7) course was co-constructed by these various stakeholders in 2002 (Kreig & Sharp, 2002). Due to the collaborative and negotiated nature of the course design, the stakeholders shared ownership for the implementation of the course and for its evaluation and ongoing improvement (Sharp & Turner, 2008).

Because of this shared responsibility, the course was designed with the school practicum at the base of all of its components. For example, university-based components of the course incorporated strong practical elements, such as visits by pre-service teachers to schools and visits by school students to the university-based components of the course. The centrality of the practicum has provided real-life problem-based learning, teaching and research to occur.

This partnership between the district, schools and the university has opened up opportunities for collaborative investigations of curriculum, the pursuit of joint research interests and stronger links between the program at the university and professional practice. (Kreig & Sharp, 2006, p. 1)

The program’s distinctive features included:

- collaboration with schools and learning centres in program delivery and design
- links made by a small number of full-time staff between different aspects of the program both at the university and in schools
- formation of a learning community made up of students, key staff, school personnel and parents
- commitment by associated casual staff to the principles and philosophy of the program
- links between content, curriculum and teaching knowledge and the art of teaching by the program teams
- focus on reflection, critical analysis, research and informed judgement
- focus on the development of evidence-based and intellectually challenging teaching approaches that support the integration of curriculum

This program illustrates how benefits can be gained by all stakeholders when children, parents, schools, TEIs and communities are genuinely involved in pre-service
teacher education courses right through from inception and implementation to evaluation.

Compressed course and school partnership (University of Auckland, New Zealand)

One of the reasons for the construction of the University of Auckland (UA) partnership model was to address the teacher shortage in New Zealand through the development of a Postgraduate Diploma in Education (Hope, 1999). Not surprisingly, its other aim was to produce quality teachers (Hope, 1999). In an effort to strengthen the link between theory and practice, the UA practicum was designed as a continuous placement as opposed to block placements. This means that pre-service teachers were placed in schools in every semester, where they spent three days in schools and two days at university each week. The author found that the associate teacher, mentors, principals and pre-service teachers preferred this model of placement to the block placement adopted by other universities in New Zealand because “the continuous placement model was more likely to assist student teachers to develop appropriate teaching skills over thirty weeks than less frequent block placements” (Hope, 1999, p. 186).

To provide the pre-service teachers with experience in a variety of contexts, the three practicums took place in schools of different socio-economic status, with different year levels of students and multiple opportunities for the pre-service teachers to develop their competencies. The mentor teacher played an important role in this program, as he/she was responsible for delivering in-school support and course delivery. Hope (1999, p. 186) describes this role: “Course planning and course delivery are shared with mentors supporting lecturers at the university in addition to their in-school delivery”. This demonstrates a sharing of responsibility of teacher education between UA and its partnership schools. The mentor teachers were provided with university training on carrying out their role to enhance the quality of the placements for pre-service teachers. The training for mentor teachers also ensured consistency between ‘what happened’ in schools and what had been taught at the university.

This case study demonstrates how partnerships between schools and university can create a better professional experience for pre-service teachers.

Self-study by teacher educators (Monash University, Australia)

This case study examines how one teacher educator sought to improve her practice through self-study. The author explains how by studying oneself to improve practice, confidence may be built amongst teacher educators, and pre-service teacher programs may be improved (Berry, 2004). She documented her teaching and her students’ learning by writing private journal entries, interviewing her students twice during the teaching year, making an online journal available to the class, analysing private emails with one student, and videotaping her lessons.

In carrying out her self-study of her own teaching, Berry (2004) identified some common problems faced by teacher educators: for example, she highlighted the
feelings of uncertainty that teacher educators face when they attempt to move away from traditional teaching methods. This challenged her beliefs about teaching and learning and, as a consequence, she redesigned the pre-service teacher education unit that she was teaching by providing more scaffolding for pre-service teachers to move from traditional to more constructivist teaching and learning strategies.

Webfolios to strengthen links between theory and practice (James Cook University, Australia)

In this case study, webfolios were employed to strengthen the links between theory and practice for pre-service teachers in an early childhood program. This involved the use of web-based case studies and a variety of media to encourage the pre-service students to develop solutions to authentic problems that they might encounter as teachers (Sorin, 2005). According to Sorin (2005, p. 102), this approach allowed the students to examine “significant professional issues in an integrated, cross-curricular way that incorporated different disciplinary approaches”. It also promoted pre-service teachers’ competencies in collaboration, problem solving and inquiry, and communication. The collaboration went beyond that with fellow pre-service teachers to with professionals from the wider community, such as police and social workers. Furthermore, the author thought the students’ use of technology in the case studies promoted their confidence in this area.

When evaluated, the participants indicated that they found the content relevant; however, there was disagreement about whether the contribution made by the professionals in the learning community was beneficial. Nonetheless, all of the stakeholders agreed that there were benefits to participating in a learning community. The use of technology provided a number of advantages, such as providing the pre-service teachers with time to consider their responses and the ability to participate at a time that was convenient and flexible. Please compare this with the chapter in this book by Jenny Lane.

Action research for physical science pre-service teachers (Institute of Education, Taiwan)

This case involved pre-service teachers studying a constructivist approach to teaching science in a restructured method course, and conducting action research with an assigned teacher collaborator while they were on teaching practice (She, 2004). In Taiwan, teaching practice is carried out for one year prior to teacher certification. The action research involved pre-service teachers identifying and tackling problems within their classroom after one month of teaching practice. Each pre-service teacher was then required to implement a method they had explored in the constructivist method approach used in their pre-service teacher education course. According to She (2004), the constructivist method course and
the action research assignment should be part of all pre-service teacher education programs.

This case study is an example of using a practical approach to help pre-service teachers gain experience in problem solving; and of using action research to give the participants a research methodology for examining and theorising about their own practice.

An inquiry case-based approach (University of Sydney, Australia)

Similar to the use of the webfolios previously discussed, this case study examines a method of problem solving in which the pre-service teachers took responsibility for their own learning. The inquiry case-based approach promoted the development of competencies that would prepare pre-service teachers for the complex demands of the teaching profession (Ewing, Smith, & Horsley, 2003). It was implemented across two years and incorporated students’ prior learning. The first phase concentrated on group work; in phase two the students explored case studies with more detail; in phase three the pre-service teachers wrote their own case studies and shared them; and in phase four the students undertook a collaborative research project.

Notwithstanding the exemplary practices revealed above, there are still gaps in pre-service teacher education in the Asia-Pacific region that need to be addressed.

GAPS IN PRE-SERVICE TEACHER EDUCATION

Many of the case studies on pre-service teacher education above were aimed at bridging the gap between theory expounded at university and ‘what happens’ during teaching practice in schools. This gap remains a challenge for TEIs in the region (Feiman-Nemser, 2001), but we think it is a healthy challenge, not a matter of doom and gloom. The case studies presented in this chapter represent a clear and ongoing attempt to assist pre-service teachers to develop theoretically sound practical skills in a world that requires teachers to be global educators and lifelong learners. We return to this point in the conclusion below.

Waghorn and Stevens (1996) in a study of practicum in New Zealand found that the pre-service teachers tended to abandon the theories taught at university in favour of adopting methods that seemed to work in schools. Participants in this study indicated that, whereas supervising/cooperating teachers were usually receptive to the pre-service teachers introducing new ideas and practices, the students in the class were not; so it was the school students’ resistance to change that dissuaded pre-service teachers from implementing new strategies. As one pre-service teacher in the study commented: “The children had not been grouped for these activities previously. The supervising teacher was happy for this to take place, but the children’s resistance proved overwhelming” (Waghorn & Stevens, 1996, p. 76). This suggests, among other things, that educational ‘reforms’ and ‘improvements’ cannot be made easily, no matter how well versed teachers are in the ‘best practices’ of the profession. Perhaps pre-service teachers need to know
that ‘improvement’ entails cultural change in an environment where there are multiple realities.

One of the other gaps revealed in the case studies is the apparent lack of research on what constitutes effective pre-service teacher education in the Asia-Pacific region. The *Top of the Class* report mentioned above emphasises the importance of determining “what is meant by quality teacher education outcomes and (how) to identify the approaches that best deliver them” (House of Representatives: Standing Committee on Education and Vocational Training, 2007, p. 9). Surely most of the innovations trialled in the case studies were grounded in the findings of previous research, but it must be acknowledged that this theoretical base is typically formative and incomplete; any new application of an educational idea needs to be scrutinised carefully. Of course, all forms of research take time, a precious commodity in education; and many education systems in the Asia-Pacific region are already woefully under-resourced. Fortunately, in some of the case studies above, especially the ones on portfolios in Australia and on action research in Taiwan, there was recognition of the importance of basic research skills in a teacher’s repertoire.

The studies presented in this chapter also tend to be concerned with the challenge of shifting their purposes and systems into a new era in which teachers operate with constructivist pedagogies rather than transmission-ist ideas of teaching and learning. Although this fundamental epistemological shift has been alluded to in pre-service education courses, there appears to be a gap in the literature as to whether it has been actualised in all levels of schooling. Furthermore, there is a requirement for research into whether or not such a change in teaching and learning directions are accepted, understood or wanted by the community at large.

In terms of gaps in the research associated with the success or otherwise of TEIs, we suggest, after considering the current and past contexts of Asia-Pacific TEIs, that there are many possible opportunities to integrate the experiences of graduated teachers into the courses facilitated by their original TEIs. That is, if stronger and longer-lasting connections are made between TEIs and their graduated teachers in schools, the success or otherwise of the TEIs systems and processes may be more easily and effectively evaluated. Outcomes of such evaluations would surely be considered useful data with which to inform the future development of courses and programs with TEIs in the region.

Lastly, the case studies explored and analysed in this chapter indicate an ongoing concern with resourcing. At present, most TEIs operate under fairly insular conditions in that they tend not to explore cross-institutional partnerships. Although most of the TEIs mentioned in this chapter have become very adept at interacting and negotiating with other stakeholders in the community (schools, parents and community bodies), most of these studies do not reflect a situation where TEIs interact with each other. Because many of the challenges set before our TEIs are related to funding and resources, perhaps a future development of these TEIs could be to explore possibilities for resource sharing for funding efficiency.
CONCLUSION

Of the many ideas about pre-service teacher education and its fit with its education system expressed in this chapter, we take the most important to be the need for all concerned to improve their communication with each other. And by ‘communication’ we do not just mean being able to convey messages efficiently. We are talking about improving understanding of the viewpoints and realities of all stakeholders: schoolteachers, teacher educators, pre-service teachers, education authorities, politicians, parents and students of all ages.

Crucial to improved communication are partnerships between stakeholders in which respect and humility can flourish. Perhaps stakeholders can then begin to not be paralysed by such problems as the so-called gap between theory and practice. The most successful case studies presented in this chapter are characterised by the element of negotiation – in which all stakeholders are willing to negotiate, and such willingness becomes an integral aspect of their communication.

Integrated or holistic approaches to program design have also been shown to create better opportunities for communication between stakeholders. Hoban (2004) recommends an integrated approach in program design that is more reflective of an authentic teaching situation where disciplines overlap, as compared to “a conceptual framework that promotes a fragmented teacher education program and does not complement the nature of teaching as a complex profession” (p. 123). Clearly, an integrated and connected approach is preferable.

Closing the gap between what pre-service teachers learn at university and what they experience on their professional experiences becomes less of a concern when stakeholders are more aware and respectful of ‘what is going on’ in each other’s domain. Another opportunity for improved awareness and respect is enlightened professional development in which teachers and teacher educators profit from each other’s practical and theoretical knowledge. This already happens to some extent when confident pre-service teachers engage with reasonable teacher mentors. They learn from each other, and the traditional power differential is short-circuited.

We think it is time to re-view the notion of the gap between theory and practice. Just as an experienced and effective classroom practitioner must struggle (in the best sense) to apply her general knowledge (which is never complete) to the particularities of everyday classroom problems, so must a teacher educator struggle to make sense of and close the gap between his incomplete theoretical knowledge about his field of expertise and the very real problems his students are encountering both at university and in teaching practice. Thus closing gaps between the ideal and the actual are ever-present challenges for all who are engaged in education.

NOTES

1 The term associate teacher in this instance refers to the teacher of the class/subject in which the pre-service teacher carries out her placement.

2 The term mentor teacher in this instance refers to a person appointed in each school to offer support and in-school course delivery to the pre-service teacher (Hope, 1999).
REFERENCES


Maria Northcote
University of Newcastle, Australia

Cher Ping Lim
Edith Cowan University, Australia