

# Curriculum Development in Technology-Enhanced Environments

**Mike Keppell**

*The Hong Kong Institute of Education, Hong Kong*

**Eliza Au**

*The Hong Kong Institute of Education, Hong Kong*

**Ada Ma**

*The Hong Kong Institute of Education, Hong Kong*

**Christine Chan**

*The Hong Kong Institute of Education, Hong Kong*

## INTRODUCTION

As teacher-educators, we are acutely aware of our responsibilities in nurturing the knowledge, attitudes, and beliefs of pre-service teachers. As part of our interest in improving our teaching, learning, and assessment practices, we have been participating in an action-research project on technology-enhanced assessment over the last 12 months. Throughout this collaboration, we have become aware of our assessment practices and have been delighted that this has also resulted in a questioning of our current learning design for our modules and further clarity in our own thinking about why we teach the way that we do. The process of action-research has forced us to examine our educational beliefs and how these motivate our teaching and learning. This article focuses on why as teacher-educators it is our obligation to articulate our theories of teaching and learning. It is essential that we articulate these often-implicit theories not only as a means of engaging in dialogue with other teacher-educators, but also as a means of engaging in dialogue with our own students who are pre-service teachers. This cascading waterfall of dialogue and explicitness may allow pre-service teachers to gain insight into the decisions we make as teacher-educators and the rationale we use in our teaching. This obligation has important ramifications for the education of children in the Hong Kong setting, as pre-service teachers may see these explicit rationales as a guide to their own teaching

within the early childhood, primary, and secondary settings.

This approach is equally important whether our learning occurs within the face-to-face setting, a mixed-mode context in which a module is taught partially online in conjunction with face-to-face teaching, or whether an entire module is taught at a distance and involves no face-to-face contact between the teacher and the 'virtual' students. We would argue that it is probably even more crucial in the distance education setting to articulate theories of teaching and learning for the 'virtual' teacher-educator students. The addition of technology also adds another veneer of complexity to the situation. It is essential when discussing technology options that we articulate our theories of learning that motivate their design as a means of dispelling the common belief that they are technology-driven interventions as opposed to theory-driven interventions (Koschmann, Kelson, Feltovich, & Barrows, 1996). Learning, not technology, motivates our use of educational technology interventions to create rich learning environments. Technology is only useful when it enhances the learning environment by addressing an educational problem that cannot be solved more effectively using another teaching method. This article will examine the rationale for articulating our theories and examine teacher beliefs about teaching and learning and technology. It will also examine pre-service teacher beliefs and how these beliefs have influenced our module design and the implica-

tions for teacher-educators and pre-service teachers.

## BACKGROUND

### Articulating our Theories of Teaching and Learning

Why is it so important to be explicit about our theories of teaching and learning? The simple answer is that our role is to mentor pre-service teachers so that they can become teachers who will be open to sharing their own ideas about teaching and learning with colleagues and their own students. As teacher educators we are initiating novices into a community of practice and moving them from ‘legitimate peripheral participation’ to full participation in the community of teaching practice (Lave & Wenger, 1991). To make a difference in the school setting, they need robust and diverse models of teaching and learning which need to be modeled by their own teachers. However the university context may not always assist the process of open dialogue between colleagues and with students. For example:

*The institutional culture of universities creates few opportunities for academic staff to share information about their teaching, even within one department. Because teacher education almost always involves students in a number of departments, the odds are very high that those involved in the education of any one student will never ever have met, much less discussed their philosophies and pedagogies. (Martinez, 1998, p. 100)*

Hudson-Ross and Graham (2000) also support this view by suggesting that “we believe that teachers should model their stance and theories in all they do. It is our obligation as university teachers to make explicit our beliefs and theories” (p. 8) and assist pre-service teachers in developing their own theories. As teacher-educators we need to be explicit about the theories of teaching and learning that influence our work; in addition we need to encour-

age our students to also be explicit about their thinking, decisions, and actions in their teaching and learning (Hudson-Ross & Graham, 2000).

### Teacher Beliefs About Teaching and Learning

Beliefs about the nature of knowledge, teaching, and learning have been found to be powerful factors in our actions and our approaches in education. “Beliefs are the ideas people are committed to...” and they lead to “action agendas or goals” that guide teachers’ decisions and behaviors, as action is interwoven with personal beliefs (Lumpe & Chambers, 2001, p. 93). Epistemological beliefs focus on the nature and acquisition of knowledge, and have been found to affect a wide range of parameters in teaching and learning (Brownlee, 2001, p. 281). Howard, McGee, Schwartz, and Purcell (2000), in their own examination of teacher beliefs, summarized the literature and suggested that teacher beliefs affect curriculum implementation, instructional approaches, teaching strategies, and problem-solving strategies. This article focuses on exposing the beliefs of four teacher-educators and how these beliefs have subsequently affected learning design.

### Teacher Beliefs About Technology

Wang, Ertmer, and Newby (2004) suggest:

*There is substantial evidence that teachers’ beliefs in their capacity to work effectively with technology—that is, their self-efficacy for technology integration—may be a significant factor in determining patterns of classroom computer use...Pre-service teachers who were exposed to vicarious experiences that were related to successful technology integration experienced significantly greater increases in judgments of self-efficacy for technology integration than those who were not exposed to these vicarious experiences. (pp. 231, 240)*

These findings have important implications for both teacher-educators and pre-service teachers. It

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