Abstract

The pedagogical knowledge learned by pre-service teachers often fails to transfer to teaching practice. Instead, new teachers revert to instructional strategies they observed as children. This chapter describes design research conducted over four years, where pre-service teachers were immersed in an authentic learning environment using multimedia to learn mathematics assessment strategies. The first study was conducted with pre-service teachers in the second year of their degree, and then the second study followed up with the same people in their second year as practising teachers. The first study revealed several constraints for the participants.
on professional practice, including limited time and the influence of the supervising teacher. Later, as practising teachers, they faced cultural and practical constraints within the school environment that prevented them from fully operationalising the pedagogical principles they learned as preservice teachers.

Transfer of Learning

Transfer — or the lack of it — continues to be a critical issue in education. Educators (as described by Whitehead, 1932) have been challenged to develop strategies to ensure that learning does not remain “inert” at those times it is needed to solve real problems. Elliot Eisner summed up the problem well:

_The really important dependent variables in education are not located in classrooms. Nor are they located in schools. The really important variables are located outside schools...It’s what students do with what they learn when they can do what they want to do that is the real measure of educational achievement._ (Eisner, 2001, p. 370)

While the transfer of learning is important in the school context, the issue has continuing relevance for university educators as well. In particular, the outcomes for teacher education courses must go beyond knowledge of the theoretical notions encountered in philosophies, psychologies and sociologies of education, to reflect how these theories apply in practice in the classroom. Unfortunately, the evidence to show that theory transfers to practice in teacher education courses is not strong. In mathematics education courses, for example, modern constructivist theories of learning have been promoted in recent years. However, the practices of novice teachers in schools continues to reflect traditional approaches to teaching, based on their own school experiences as students (Brown & Borko, 1992; Raymond, 1997). These traditional practices reflect beliefs about teaching and learning, built up over many years of schooling, that are deeply ingrained and difficult to change (Ball, 1990).

Another reason for the inability of teacher education courses to transfer theory to practice is too little engagement with genuine situations and too much emphasis on theoretical perspectives (Resnick, 1987). The challenge for teacher educators is to make meaningful connections between theory and practice, where practice is often reflective of traditional approaches to teaching and learning. School practicums, for example, should provide real world experience
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