

Chapter VII

One-to-One Computing and Teacher Transformation

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ABSTRACT

This chapter outlines a recent study on 1:1 computing and teacher transformation. It begins with an introduction to the theoretical framework of transformative learning and an overview of the professional literature dealing with 1:1 computing and teacher transformation. The study is then outlined, including the sampling procedures, participant background, and methodologies used. The remainder of the chapter presents the findings and conclusions related to the central theme of whether 1:1 computing transforms teachers. The chapter concludes with implications for the future.

INTRODUCTION

There has been a great deal of debate in the professional literature on the benefits of 1:1 computing for elementary school children. For instance, 1:1 computing increases student achievement especially in writing, analysis, and research (Bebell, 2005; Fadel & Lemke, 2006; Livingstone, 2006; Russell, Bebell, & Higgins, 2004); improves student attendance and school enrolment (Barrios, 2004), motivates students to become self-directed learners (Livingstone, 2006) and become engaged (Cromwell, 1999; MEPRI, 2003); decreases dis-

ciplinary problems (Baldwin, 1999); leads to an increase in standardized test scores (Stevenson, 1999); and lays the foundation for constructivist learning (Bransford, Brown, & Cocking, 2000; Light, McDermott, & Honey, 2002). There has, however, been little discussion on the effect teaching with technology has on the children's teachers. My goal in this chapter is to present findings from a recent study on teachers transformed through technology in British Columbia, Canada, in particular, teachers in 1:1 classrooms; that is, I define 1:1 computing classrooms as places where every child in the class has a laptop computer

with wireless Internet and printer capabilities for at least 50% of the day.

TRANSFORMATIVE LEARNING

The central theoretical framework adopted in this study was Mezirow's (1991) transformative learning theory. This theory involves a learning process of examining, questioning, validating, and revising perceptions (Cranton, 1994), which is based on constructivist assumptions of adult learning. According to Mezirow (2003, p. 58), it "is learning that transforms problematic frames of reference—sets of fixed assumptions and expectations (habits of mind, meaning perspectives, mindsets)—to make them more inclusive, discriminating, open, reflective, and emotionally able to change." The theory itself has been debated in the literature for nearly 30 years, and it has been integrated into education, psychology, philosophy, sociology, nursing, and religious studies, to name a few disciplines. It has also spawned an international journal dedicated to the theory's application in myriad studies. In his original 1975 study with 83 women in 12 different re-entry college programs, Mezirow (1978) proposed 10 phases to transformative learning. The two distinct elements of these 10 phases could be characterized as the disorienting dilemma (Phase 1) and critical self-reflection (Phases 2 to 10). Mezirow (1991, p. 94) says the disorienting dilemma "begins when we encounter experiences, often in an emotionally charged situation, that fail to fit our expectations and consequently lack meaning for us, or we encounter an anomaly that cannot be given coherence either by learning within existing schemes or by [rote] learning new schemes."

The second element, critical self-reflection, involves a close examination of the factors (Phases 2–10) which cause a change in a person's worldview. According to Mezirow (1991), it is imperative that the person consider these contributing factors

to the change so that a demonstrable transformation can occur in that phase.

In a book chapter on adult learning theory, Mezirow (1995) emphasized the importance of critical reflection in transformative learning theory. Straightforward reflection is the act of "intentional assessment" (p. 44) of one's actions whereas critical reflection not only involves the nature and consequence of one's actions but also includes the related circumstances of their origin. He presented three types of reflection and their roles in transforming meaning schemes and perspectives: content reflection, process reflection, and premise reflection. In the process of reflection, teachers ask themselves critical questions (Cranton, 1994), but they also engage in critical discourse with their peers. According to Mezirow (1991, p. 78), under optimal conditions, participation in this discourse would have:

accurate and complete information, be free from coercion and distorting self-perception, be able to weigh evidence and assess arguments objectively, be open to alternative perspectives, be able to reflect critically on presuppositions and their consequences, have equal opportunity to participate (including the chance to challenge, question, refute, and reflect, and to hear others do the same), and be able to accept an informed, objective, and rational consensus as a legitimate test of validity.

The application of distortions in epistemic, sociolinguistic, and psychological meaning perspectives and the use of critical discourse with others are clearly applicable to learning educational technology, in general, and to 1:1 computing, in particular. Teachers would need to re-evaluate what they believed they knew and what they actually knew (epistemic), what specific language was used in educational technology settings (sociolinguistic), and what they perceived about their own ways of learning (psychological)

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