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Pedagogies of pace: Temporal insights into Canadian pre-service teachers' pedagogical decision-making

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ABSTRACT

Many suggest modern life is accelerating and attribute such perceptions to advances in technology and the commodification of clock time, as evident in how mobile technologies blur the lines between personal and professional life. As teacher educators of elementary and secondary literacies, our interest in time and its relationship to pedagogy, was in response to inductive analysis of several years of data in which pre-service teachers described time-related issues/facets related to their ability and willingness, if any, to integrate literacy into their content area teaching. This article identifies indicators demonstrating a range of pedagogical content knowledge growth in pre-service teachers as viewed through their understanding, and use of time, in relation to instructional decision-making, planning, and classroom experiences regarding the use of literacy strategies. Using time as a theoretical lens to understand pre-service teachers' developing pedagogy, we argue, suggests possibilities for how concepts of time may complement, and expand, pedagogical content knowledge scholarship.

1. Introduction

Many suggest modern life is accelerating (Csikszentmihalyi, 1997; Schulte, 2014) and attribute such perceptions to advances in technology and the commodification of clock time (Wajcman, 2015), as evident in how mobile technologies blur the lines between personal and professional life (Spink, Cole, & Waller, 2008). Time use researchers suggest individuals' perceptions of time may be understood as their realities (Fisher & Gershuny, 2013) in an era in which time for leisure is declining (Duxbury & Higgins, 2001; Mattingly & Sayer, 2006), time scarcity is increasing (Zuzanek, 2017), and the swift advances of information and communication technologies (ICTs) are changing how people understand time (Vilhelmson, Thulin, & Ellder, 2017; Wajcman, 2015).

As teacher educators of elementary and secondary literacies, our interest in time, particularly pedagogy as connected to inter-related temporal functions and constructs, was in response to inductive analysis of several years of data in which pre-service teachers (PSTs) described time-related issues/facets related to their ability and willingness, if any, to integrate literacy into their content area teaching (Murray Orr, Mitton-Kükner, & Timmons, 2014a; Mitton-Kükner & Murray Orr, 2014b; Mitton-Kükner & Murray Orr, 2015a; Murray Orr & Mitton-Kükner, 2015b; Murray Orr & Mitton-Kükner, 2017). The original primary research question informing this study asked: Upon completing a course in content area literacies, in what ways, if any, are secondary PSTs integrating new literacy strategies into their content area teaching during their final field experience? We have found that PSTs' references to time revealed windows into their developing pedagogical content knowledge (PCK) (Shulman, 1986), as they attempted to enact this knowledge through planning and classroom interactions (Mitton-Kükner & Murray Orr, 2018). We did not begin this study anticipating a paper about time epistemologies, but inductive analysis of data identified time as significant to PSTs' PCK development. In response to the

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data in our study, we have since learned that the study of time in educational research is pervasive (Duncheon & Tierney, 2013) and can be found across a variety of phenomena. For example, reflective of larger global trends, is a growing body of work on teacher time pressure, specifically when increasing workloads, multiple responsibilities and little time for rest intersect, and impact, teachers (Hargreaves, 1990; Skaalvik & Skaalvik, 2011); increasing the likelihood for teachers to experience burnout and emotional exhaustion (Kokkinos, 2007; Peeters & Rutte, 2005; Schaufeli & Bakker, 2004; Skaalvik & Skaalvik, 2009). In addition to providing insights about the constraints of school contexts and teachers' experiences in schools, is how time allocation research offers insights into the ways elements of time shape the learning process. For instance, Duncheon and Tierney (2013) identify multiple instances of its formative presence in how perceptions of time (clock and socially constructed time) influences the scheduling of instruction, the privileging of subject matters, and the prioritization of particular learners (Compton-Lilly, 2016), as well as its depiction as a limited resource (Collinson & Fedoruk Cook, 2001). Hence, our original research question evolved to include a second primary question on PSTs' perceptions of time in relation to literacy infusion in the content areas: Upon completing a course in content area literacies, in what ways, if any, are secondary PSTs understanding of how to integrate new literacy strategies into their content area teaching during their final field experience shaped by their perceptions of time?

The purpose of this paper is two-fold: First, to identify indicators demonstrating a range of PCK growth in PSTs as viewed through their understanding, and use of time, in relation to their instructional decision-making, planning, and classroom experiences regarding the use of literacy strategies. Second, to discuss the possibilities that concepts of time hold in complementing, and expanding, PCK scholarship.

2. Related research: content area pre-service teachers and pedagogical content knowledge

Understanding how content area PSTs grow and change in response to teacher education programs, and as they transition into their early years of teaching, has received considerable attention (Cochran-Smith et al., 2012; Grossman et al., 2000; Jones & Enriquez, 2009). Advocates of teacher education emphasize that effective teaching can begin at the pre-service stage of a teacher's career (Grossman, Hammerness, & McDonald, 2009; Seidel Horn & Campbell, 2015; Windschitl, Thompson, & Braaten, 2011) although there are limitations that may be attributed to what Seidel Horn and Campbell (2015) refer to as the “acquire-apply pedagogy of teacher education contribut[ing] to the course/field work gap” (p. 152). To identify growth in PSTs as they move through a teacher education program, scholars have drawn upon Shulman's (1986, 1987) conceptualization of pedagogical content knowledge (PCK). PCK is defined as a unique relationship of content and pedagogy in the ways a teacher enacts their expertise in the teaching of a specific subject (Shulman, 1986, 1987). Scholars of pre-service teacher education have widely used PCK to identify the ways PCK growth may occur, with the majority of research occurring in science (Loughran, Mulhall, & Berry, 2008; Nilsson & Loughran, 2012; Scharfenburg & Bogner, 2016) and math education (Ball, Thames, & Phelps, 2008; Depaepe, Verschaffel, & Kelchtermans, 2013) with some attention in the teaching of English literature (Grossman, 1990), social studies (Wilson & Wineburg, 1988), physical education (Griffin, Dodds, & Rovegno, 2013) and reading instruction (Moats, 1999; Phelps & Schilling, 2004). However PCK has its criticisms, most specifically, its lack of clear theoretical foundations (Ball et al., 2008; Depaepe et al., 2013) and scholars have identified the ways PCK might be further improved upon in light of the advancement of information communication technologies (ICTs). Technological pedagogical content knowledge or TPCK is understood to define how teachers employ “intelligent pedagogical uses of technology” (Koehler, Mishra, & Yahya, 2007, p. 741) within specific disciplines. Later, the acronym expanded to TPACK to emphasize the intersection of technology, pedagogy and content knowledge at work (Koehler, Mishra, & Yahya, 2007; Thompson & Mishra, 2007). Much like how the bulk of the PCK literature sits in pre-service science and math teacher education, the same can be said for TPCK/TPACK and has been used by researchers in different teacher education programs globally; for example, in Australia (Holmes, 2009), Cyprus (Angeli & Valanides, 2008), and Singapore (Koh, Chai, & Tsait, 2010). We introduce the evolving nature of Shulman's PCK as a way to situate our own understanding of how time epistemologies (Tochon & Munby, 1993) may further complement Shulman's of original conceptualization of PCK.

3. Theoretical framework

In our theoretical framework, we draw upon four central notions, specifically pedagogical content knowledge (Shulman, 1986, 1987), 21st century time constructs (Duncheon & Tierney, 2013), time epistemologies (Tochon & Munby, 1993), and 21st century literacies (Beach et al., 2016; Gee, 2001, 2007; Kalantzis & Cope 2011; Kane, 2011; Lind, 2008).

Knowledge of decision-making processes about approaches and materials for particular lessons or units of study has been deemed one of three kinds of knowledge teachers possess, pedagogical content knowledge (PCK). Shulman (1986) describes PCK, alongside content knowledge and curriculum knowledge, as vital to teachers' practice. As PSTs work toward a “transformation of their identities” (Danielewicz, 2011, p. 9) from student to teacher, it is an important part of the work of teacher educators to support them in gaining confidence and competence in these three kinds of knowledge described by Shulman. PCK is perhaps most intricately connected with concepts of time since it requires an ability to make in-the-moment decisions based on the dynamics and environment of the classroom filled with students (Schön, 1987).

In consideration of 21st century time constructs, Duncheon and Tierney (2013) identified three temporal paradigms as important to the teaching and learning process: Clock time, socially constructed time, and virtual time. Clock time, Duncheon and Tierney propose, represents “a measurable construct” that is used to “explain behaviors and choices relative to quantifiable time allocations” (p. 243). Related to clock time, socially constructed time attempts to understand subjective experiences of time through perceptions of “diversity, quality, and meaning” (Duncheon & Tierney, 2013, p. 249). The final paradigm of the three, virtual time, Duncheon and

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