



Examining teachers' adaptive expertise through personal practical theories

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HIGHLIGHTS

- Adaptive expertise is based on perceptions and interpretations of classroom events.
- Adaptive expertise works through fixed and open teaching orientations.
- The emphases on teachers' orientations show variations in adaptive expertise.

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ABSTRACT

This study examines teachers' adaptive expertise and their personal practical theories (PPTs), which include both explicit and implicit rationales for their actions. Teachers' ability to flexibly use their PPTs in demanding classroom situations is essential for understanding and developing teaching more in-depth. For this purpose, stimulated recall interviews were conducted with 17 primary school teachers, and the data were analysed using inductive coding. The results showed that the teachers' adaptive expertise was characterised by a varying emphasis on a fixed versus open teaching orientation, and their level of adaptiveness differed. Teachers' ability to adapt during interactive classroom events was related to their use of these two types of orientation.

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1. Introduction

Adapting one's knowledge and skills when making complex decisions about teaching is a demanding task (Allen, Matthews, & Parsons, 2013; Bohle Carbonell, Stalmeijer, Könings, Segers, & van Merriënboer, 2014; Corno, 2008; Darling-Hammond & Bransford, 2005). It requires educating teachers and developing their ability to use situation-specific and flexible teaching methods to support diversity in student learning (Fairbanks et al., 2010). As Tsui (2009) noted, adaptive expertise is developed through 'the processes of reflection and conscious deliberation in which practical knowledge is theorised and theoretical knowledge is interpreted in practice' (p. 437). However, it is challenging for teachers to be aware of often implicit adaptive processes (Mylopoulos & Scardamalia, 2008), and more research is needed to gain a better understanding of and to support teachers' adaptive development during teacher education

and their in-service learning (Grossman, 2007; Vesterinen, Toom, & Krokfors, 2014).

Research on adaptive expertise has illustrated how teachers learn and develop effective teaching behaviours through situation-specific observations and interpretations of their actions (Bell & Kozlowski, 2008; Corno, 2008; Gibson & Ross, 2016). Adaptive practices drive teachers' to reflect on their knowledge in a flexible and innovative manner (Bransford, Derry, Berliner, Hammerness, & Beckett, 2005), and they help teachers learn and develop in their work by applying practical theories (Darling-Hammond, 2016; Parsons & Vaughn, 2013).

However, more attention needs to be paid to situations that allow teachers to reflect on their teaching from the perspective of their reasons for engaging in those actions (Lin, Schwartz, & Hatano, 2005). This is important because teachers' ability or inability to adapt their observations to their practical knowledge leads to more effective or less effective decision making when they are teaching (Beck & Kosnik, 2001; Darling-Hammond & Bransford, 2005; Lin et al., 2005; Parsons & Vaughn, 2013). Through this understanding, it is also possible to understand how teachers' ability

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to make instructional adaptations necessary demand creativity and social change in different contexts.

One possibility is to approach teachers' adaptive expertise from the perspective of their personal practical theories (PPTs), which are important sources for teachers' adaptive decisions and behaviours but also for their professional development (Allen et al., 2013; Fairbanks et al., 2010; Hayden, Rundell, & Smyntek-Gworek, 2013). PPTs frame teachers' abilities to notice the need to adapt instructional decisions and possibly reconsider and revise their decisions and actions. Thus, 'PPTs may help us better understand why some teachers are more responsive to students and situations whereas others are not' (Fairbanks et al., 2010, p. 163). This idea to set up PPTs as teachers' orienting framework for adaptive behaviour also resembles teachers' living educational theories, which help teachers to identify and explain their employed distinct action strategies and the starting points for them (Atkins & Wallace, 2012; Whitehead, 2009).

Overall, although previous studies have shown that PPTs change and develop throughout a teacher's career via teaching experience (Anthony, Hunter, & Hunter, 2015; von Esch & Kavanagh, 2018; Levin, He, & Allen, 2013), we need to better understand the extent to which teachers' PPTs are stable or adaptive (Bohle Carbonell et al., 2014; Wetzel, De Arment, & Reed, 2015). It is especially important to determine how routinized knowledge statements are connected to teachers' adaptive decisions and actions (Varpio, Schryer, & Lingard, 2009), which would enable a better understanding of how teachers learn through their teaching experiences, and how their PPTs are constantly shaped by their practices (Barnett & Koslowski, 2002; Bransford et al., 2005). As von Esch and Kavanagh (2018) noted, through these processes, adaptive teachers 'continually learn, add new knowledge, and refine their understandings of students, instruction, and learning' (p. 241).

This study aimed to clarify these requirements by exploring the following research questions:

- 1) In what ways do teachers' PPTs enable them to notice and adapt their decision-making in dynamic teaching contexts?
- 2) What are the relationships between and meaning of changes in teachers' adaptive practices and PPTs?

2. Theoretical background

The capacity to perceive and learn while teaching students is essential to a teacher's ability to develop adaptive practices and ensure effective teaching (Beltramo, 2017). As Dewey (1938) noted, teachers need to actively modify their thinking and actions while teaching. This implies the ability to notice 'important details in students' responses, and interpret this information accurately and comprehensively to adapt instruction in the moment' (Gibson & Ross, 2016, p. 2). These adaptive demands require knowledge and skills that enable teachers to act efficiently and maintain an understanding of the demands of each specific situation (Fairbanks et al., 2010; Varpio et al., 2009). According to Soslau (2012), adaptive teachers

are able to "strategically move away from planned curriculum components to better support the contextual needs of their pupils, question familiar solutions to problems by noticing unique features, and recognise the need to refine, change, and try out different decisions while paying close attention to the impact on their pupils" (p. 768).

Thus, adaptive expertise demands that teachers be flexible when reasoning and restructuring their knowledge and prior

experiences while teaching (Bohle Carbonell et al., 2014; Hammerness et al., 2005; Hayden et al., 2013). To a large extent, this flexibility is shaped by the contexts that regulate how the experiences are activated (Barnett & Koslowski, 2002). Furthermore, teachers' identity and personality characteristics (i.e. conscientiousness, openness to experience, beliefs) influence their adaptive expertise (Bohle Carbonell et al., 2014; Levin & He, 2008). Thus, the sources of the teachers' adaptive expertise are closely associated with their PPTs and the ways in which the PPTs are linked with the teachers' observations and actions in teaching situations.

2.1. Teachers' PPTs as sources of adaptive expertise

Teachers' PPTs are the beliefs and knowledge structures that guide their interactional and instructional actions, which are developed via their teaching experiences (Cornett, Yeotis, & Terwilliger, 1990; Maaranen, Pitkäniemi, Sternberg, & Karlsson, 2016). As such, PPTs are essential sources of teachers' professional learning and the development of their ability to be adaptive. Many studies (e.g. Fairbanks et al., 2010; Levin & He, 2008; Wetzel et al., 2015) have shown how instructional practices can transform teachers' knowledge and beliefs into PPTs that are more situationally adaptive. The argument that PPTs have the most powerful influence on instructional practice and on creating a context for change in teaching is supported by the studies of Gess-Newsome, Southerland, Johnston, and Woodbury (2003) and von Esch and Kavanagh (2018).

Teachers' PPTs are closely related to reflective practices, which allow teachers to make their professional knowledge and beliefs explicit and available for examination (Fairbanks et al., 2010; Meijer, Verloop, & Beijaard, 1999; Russel, 2018). Beck and Kosnik (2001) emphasised that reflecting is a natural and necessary part of the teaching process: 'teachers *can* reflect while teaching; that we commonly *do*; and that we *must* reflect while teaching if we are to be attentive and responsive' (p. 220). Teachers' reflections can be considered systematic ways of thinking (Korthagen & Vasalos, 2005; Rodgers, 2002) that develop their PPTs. Reflections-in-action are situation-specific processes related to teachers' PPTs during an interaction, while reflections-on-action focus on evaluating and valuing instructional decisions after the interactive phase and then connecting the experiences to the teachers' PPTs (Beck & Kosnik, 2001; Korthagen & Vasalos, 2005; Schön, 1983, 1987; Vaughn, Parsons, Burrowbridge, Weesner, & Taylor, 2016).

As Bransford et al. (2005) noted, throughout the instructional process, teachers need to balance and integrate their knowledge of the content being taught (knowledge centredness), their students' experience and needs (learner centredness), and the classroom and school environment's role in enhancing learning (community centredness). Similarly, Robertson and Richards (2017) emphasised that teachers need to understand that

students come to classrooms with a wealth of productive knowledge and experience; that this wealth is too rich and diverse for teachers and/or curricula to know fully in advance; and that the ideas students are bringing to bear are *sensible* in some way (p. 316).

These complex and demanding reflection processes require teachers to continuously involve and respond to individual students and their learning (Corno, 2008; Darling-Hammond, 2016). In these adaptations, 'teachers need to constantly learn about who their students are moment-to-moment—what their students can and want to do with guidance from their teacher, and how and what their students think about the content' (Beltramo, 2017, p. 327). This necessitates creating dialogues while teaching to connect

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