Individual differences in teacher development: An exploration of the applicability of a stage model to assess individual teachers

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ABSTRACT

Researchers have recently become interested in exploring cumulative order in teachers' use of teaching practices, which they argue may reflect stages in teacher development. However, to validly apply stage models to individuals, it is necessary to determine whether all teachers fit the stage order. This study explores whether and in how many lessons observed teaching practices do not fit the stage order and whether misfit is typical to certain teachers, which would indicate individual differences. The sample consists of 198 classroom observations of 69 teachers (two to four lessons for each teacher). Using person-fit methods, the study shows that 17% of the 198 observed lessons substantially misfit the stage order but that misfit is not characteristic to specific teachers, suggesting that it is incidental. Removing the occasional misfitting lessons allows the stage model to provide an appropriate description of teaching skill.

1. Introduction

Scholars have recently advocated establishing stronger connections between research on teacher professional development and educational effectiveness research (EER) (Antoniou & Kyriakides, 2013; Kyriakides, Creemers, & Antoniou, 2009; Muijs et al., 2014; van der Lans, van de Grift, & van Veen, 2017a). Traditionally, EER has addressed questions about what works in education (Muijs et al., 2014); within this tradition, teacher effectiveness research has generally focused on clusters of teaching practices associated with higher student achievement and learning (e.g., Brophy, 1986; Marzano, 2003; Muijs et al., 2014). This research stream has developed various observation instruments based on these findings (e.g., Kane et al., 2012; Strong, 2011) with the intention of informing teachers of how they perform in the classroom. However, consistent with the effectiveness tradition, in general classroom observation instruments focus on identifying effective teaching and do not address how it develops (e.g., Antoniou & Kyriakides, 2011, 2013; van der Lans et al., 2017a). In response, both van de Grift and Kyriakides have independently proposed stage models with the intention of finding the "developmental priorities of the teachers" (Antoniou & Kyriakides, 2013, p. 9) or, tracing each teacher's "zone of proximal development" (van der Lans et al., 2017a, p. 12). These stage models take a Vygotskian perspective (Palincsar, 1998; Vygotsky, 1978) on teacher development and argue that the success of teacher professional development depends on the match between feedback (and other learning materials) given to the teacher and his or her current development level.

However, although current findings suggest that stage models may provide an adequate description of the development of effective teaching practices for *most* teachers (Antoniou & Kyriakides, 2013; Kyriakides et al., 2009; van de Grift, Helms-Lorenz, & Maulana, 2014; Van der Lans, van de Grift, & van Veen, 2015; van der Lans et al., 2017a), evaluations and feedback have implications for individual teachers, and extant studies do not exclude the possibility that stage models provide an inadequate description for a minority of teachers. Moreover, teacher development researchers have speculated that individual differences in teacher development are common (e.g., Berliner, 2001; Day, Sammons, Stobart, Kingston, & Gu, 2007; Sternberg & Horvath, 1995). If evaluators want to use stage models to advise individual teachers on directions for professionalization, training, and self-reflection, they must ensure that the particular teacher's development approximately fits with the stage model predictions. Therefore, the purpose of this study is to explore whether and how specific teachers' development aligns with the cumulative stages established by previous works.

2. Theoretical background

2.1. The international comparative analysis of learning and teaching stage model

The International Comparative Analysis of Learning and Teaching

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(ICALT) stage model identifies domains or stages of effective teaching practices. The term "effective teaching practice" refers to observable teaching practices, strategies, or methods that are positively related to students' achievement and school success, as described in, for example, Marzano (2003) and Muijs et al. (2014). Van de Grift (2014) provides an extensive literature review elaborating how the stages are embedded in teacher effectiveness.

Two theories aid interpretation of the stages we observe: Fuller's (1969) stage theory of teacher development and Bloom, Engelhart, Furst, Hill, and Krathwohl's (1956) taxonomy of educational objectives. Fuller's (1969) theory first emphasizes the basic need for respectful relationships with students, which she refers to as the "self." Second, the theory identifies the need to acquire routines and procedures for classroom management and basic instructions ("tasks"). Fuller's third stage of teacher development focuses on teachers' need to improve their instructional practices and strategies ("impact"). To further refine Fuller's rather unspecific third stage, we turn to Bloom et al.'s (1956) taxonomy, which has been updated and revised several times. We apply the terminology in Krathwohl's (2002) recent revision, which refers to Bloom's six categories of cognitive processing as remember, understand, apply, analyze, evaluate, and create. As Krathwohl elaborates, the revised taxonomy is hierarchical, reflecting stages in students' cognitive processing and learning. We adopt this perspective herein, maintaining that teachers' instructional practices can stimulate students to use these cognitive processes, and as such, they can be ordered cumulatively. We use the following six-stage model to describe teachers' skill development:

2.1.1. Learning to establish safe and respectful relationships

According to Fuller (1969), respectful relationships (herein also referred to as "climate") are among the first issues of classroom instruction that teachers must develop to become more effective. This critical role of respectful relationships is corroborated by psychological theory, including attachment (Bowlby, 1969) and self-determination (Ryan & Deci, 2000) theories. Attachment theory postulates that a safe environment stimulates children to take initiative and explore, because they know that an adult will be there to help them (Bowlby, 1969). According to Pianta and colleagues, the principles of attachment theory generalize to the classroom setting (Hamre et al., 2013; Pianta & Hamre, 2009). Wentzel's (2002) empirical findings suggest that students who view their teacher as fair and supportive (two key characteristics of our conceptualization of "respectful") are more likely to behave prosocially and thus are less likely to disturb classroom order and more likely to actively participate in academic activities. In addition, self-determination theory assigns a key role to respectful relationships in facilitating student motivation and performance (Ryan & Deci, 2000). Based on the above, our model predicts that respectful relationships are a requirement for orderly organized classrooms and successful instructions.

2.1.2. Learning to efficiently manage a classroom

Successful classroom management establishes procedures, routines, and rules about where and how learning takes place, which are necessary for instructional activities to be executed successfully (Korpershoek, Harms, de Boer, van Kuijk, & Doolaard, 2016; Muijs & Reynolds, 2003). Teacher development theory generally assigns a key position to classroom management skills (Berliner, 2004; Fuller, 1969). If the classroom becomes disorganized, teachers typically focus on reestablishing adequate classroom management and postpone further instructional activities. If disorganization happens frequently, time to practice instructional skills becomes limited.

2.1.3. Developing clear and structured explanation skills

Clear explanation prompts students' prior knowledge, rehearses critical knowledge, and checks students' comprehension of the lesson content (Muijs & Reynolds, 2003; Rosenshine, 1995). Teacher development theory views explanations of assignments and tasks as part of management procedures, because these teaching practices tend to have a procedural character (e.g., Berliner, 2004; Fuller, 1969). Fuller (1969), for example, expects teachers' explanation skills to develop simultaneously with their skill in classroom management, suggesting that the two stages are indistinguishable in practice. However, the explanation domain is also the first in which teaching practices stimulate students to engage in cognitive processing of the lesson content. In terms of Bloom et al.'s (1956) taxonomy, clear explanation helps students remember and comprehend facts and procedures. Therefore, we distinguish explanation and management as two separate stages.

2.1.4. Developing skills in activating students

Successful activation stimulates interaction between teacher and students and among students—by, for example, collaborative group work, having students explain topics to one another, or having students think aloud (Abrami et al., 2015; Muijs & Reynolds, 2003). This stage and subsequent stages pertain to Fuller's third stage, "impact." Therefore, we apply Krathwohl's (2002) revision of Bloom et al.'s (1956) taxonomy to construct further understanding of what separates subsequent stages. In terms of Bloom et al.'s taxonomy, successfully activating students stimulates them to apply and analyze the learned material. According to Bloom et al. and Krathwohl, students first need to remember and comprehend before they can apply this knowledge. Therefore, activating teaching practices can be successful only if the teacher has clearly explained the lesson content, which implies that teachers who lack routines to provide clear and structured explanation to students will have little time to deliberately practice how to activate students.

2.1.5. Learning to teach students learning strategies

Successful teaching of learning strategies enhances students' metacognitive skills and self-regulated learning—for example, by asking students to explain how they solved a problem or asking if there are multiple ways to answer the question (Abrami et al., 2015). In terms of Bloom et al.'s (1956) taxonomy, teaching learning strategies stimulates students to synthesize and evaluate the learned material. According to Bloom et al. and Krathwohl (2002), students first need to apply and analyze information before they can synthesize it with other knowledge or evaluate its value by taking different perspectives on the learned material. Thus, we maintain that teaching of learning strategies will be successful only if the teacher has successfully activated the student, which implies that teachers who have difficulty activating students will have little time to deliberately practice how to teach student metacognitive skills.

2.1.6. Developing skills in differentiation

Successful differentiation ensures that teachers adjust their instructional practice to specific students' learning needs by, for example, allowing flexibility in time to complete assignments or providing additional explanation to small groups (e.g., Reis, McCoach, Little, Muller, & Kaniskan, 2011). In terms of Bloom et al.'s (1956) taxonomy, differentiation involves helping low-ability students remember and comprehend, assisting moderate-ability students in applying and analyzing the material, and stimulating high-ability students in synthesizing and evaluating the material. Therefore, the model assumes that teachers must become skilled in all previous domains before they can truly differentiate. The word "truly" indicates that this logic allows for less sophisticated differentiation. For example, teachers skilled in only the stages explanation and activation may differentiate between low-ability and moderate-/high-ability students. Thus, the theoretical proposition is that true differentiation is last in the ordering, but in observations of actual classroom practice, rudimentary differentiation may already be observed at stages 4 and 5.

Fig. 1 illustrates the hierarchical and cumulative principle behind the model, in which skill in teaching practices of one stage is a