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Individual differences in student teachers' self-regulated learning: An examination of regulation configurations in relation to conceptions of learning to teach

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ABSTRACT

This study aimed at describing the individual differences in student teachers' self-regulated learning to teach in postgraduate professional teacher education programmes. Cross-sectional data were collected from 28 student teachers about their regulation activities and conceptions of learning to teach through open question logs from multiple learning experiences and interviews. The findings showed that the self-regulation activities of student teachers could be represented by five different configurations. In addition, it appeared that student teachers' regulation relate differently to their conceptions of learning then expected from the literature. The implications of these findings are discussed for a better understanding of the role of self-regulated learning in the professional development of student teachers.

1. Introduction

In postgraduate professional teacher education programmes two types of learning environments are often combined: studying at university and professional learning in practice. To foster the integration of student teachers' professional learning in practice with learning at the university, it is considered important that teacher education programmes support the development of self-regulated learning skills of their student teachers (Endedijk, Vermunt, Verloop, & Brekelmans, 2012; Hagger, Burn, Mutton, & Brindley, 2008). Although the concept of self-regulated learning (SRL) plays a prominent role in the design of teacher education programmes (Kremer-Hayon & Tillema, 1999), research into SRL has mainly focused on how teachers can promote SRL of their students (Bolhuis & Voeten, 2001; Kramarski & Michalsky, 2009; Niemi, 2002; Perry, Hutchinson, & Thauberger, 2008) rather than teachers' regulation of their *own* learning. Research on how student teachers plan, execute, control and evaluate their learning experiences is still in its infancy (Endedijk et al., 2012) and it is still unclear how student teachers differ in the self-regulative activities they use.

Research has identified individual differences in student teachers' conceptions of learning and *preferences* for learning and regulation activities in the context of postgraduate professional teacher education programmes (e.g., meaning-oriented vs. reproduction-oriented) (Donche & Van Petegem, 2005; Endedijk, Donche, & Oosterheert, 2014; Oosterheert & Vermunt, 2001). Moreover, findings from studies in academic learning contexts showed that conceptions of learning influence how students approach learning in particular contexts and that misfits (or dissonances) between their conceptions of learning and preferences for learning and regulation activities can occur when student teachers enter a new learning environment (Cano, 2005; Vermunt & Verloop, 2000; Vermunt & Vermetten, 2004).

Although these studies have provided evidence for the role conceptions of learning play for student teachers' professional learning experiences, they do not explicitly focus on the variety of student teachers' self-regulative activities across multiple learning experiences in different contexts. Moreover, research into the relation between student teachers' conceptions of learning and their concrete SRL activities is missing. The present study, therefore, focuses on individual differences in student teachers' regulation of their learning across multiple learning experiences and the relation with their conceptions of learning to teach. In this way, this study will make a contribution to a better understanding of student teachers' professional learning and the role of self-regulation.

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2. Theoretical framework

2.1. Self-regulated learning of student teachers

In academic learning theories, SRL is defined as an "active, constructive process whereby learners set goals for their learning and attempt to monitor, regulate and control their cognition, motivation, and behaviour, guided and constrained by their goals and contextual features in the environment" (Pintrich, 2000, p. 453). This process consists of different phases that represent a general time-ordered sequence that individuals are likely to go through as they perform a task, although different phases can occur simultaneously (Pintrich, 2000). Most models of self-regulation distinguish the similar phases as described by Zimmerman (2000) (see also Pintrich, 2004; Winne & Perry, 2000; Zimmerman, 2000):

- Forethought phase: This phase includes the processes proceeding the efforts to learn, consisting of task analysis and self-motivational beliefs (e.g., self-efficacy). The two key activities of task analysis are setting goals and the planning of the strategies to be used.
- Performance phase: This phase contains the processes that occur during learning, consisting of monitoring and self-control, for example by tracking one's performance and choosing task strategies that assist in learning.
- Self-reflection phase: This phase influences forethought regarding subsequent learning efforts, consisting of self-evaluation and self-reactions which could lead to satisfaction or to inferences for subsequent learning activities (Zimmerman, 2000).

Most studies on student teachers' regulation of learning focused on how student teachers regulate their learning while following a course at the university, rather than how they regulate their learning from practice (e.g., Corrigan & Taylor, 2004; Järvenoja & Järvelä, 2007). As learning at the workplace is less intentional and planned, does not have pre-set objectives or identifiable outcomes, and is more contextual and collaborative than academic learning (Hodkinson & Hodkinson, 2005; Tynjälä, 2008), student teachers need to learn different regulation skills to prepare themselves for further professional learning. For example, student teachers need to learn to plan and design their own learning tasks and environment, besides only learning to regulate well-designed and structured learning tasks (Niemi, 2002).

A first study on the nature of student teachers' regulation activities in a professional teacher education programme has shown that student teachers use a large variety in activities to regulate their learning (Endedijk et al., 2012; Vermunt & Endedijk, 2011). Although student teachers' regulation activities differed from students' learning in academic contexts, the main phases of Zimmerman's model could still be discerned (Endedijk et al., 2012). In addition, Endedijk et al. (2012) showed that two dimensions were underlying the variety of regulation activities. The first dimension discerned *passive* from *active* regulation of learning. *Passive* regulation was characterised by lack of argumentation for decisions student teachers had made, statements that someone else was in charge of the learning process, and an unawareness of many aspects of the regulation process. Student teachers showing *active* regulation in a learning experience reflected more deeply on the learning content, the learning process and their own role in it. They made their own decisions for a learning strategy, but also actively used information from others and used that in their reflections.

The second dimension found distinguishes prospective versus retrospective regulation of learning. *Prospective* regulation concerned the first phase of the learning process. The learning experiences were planned, goals were set and arguments for choosing a learning strategy were given. The phase after a learning experience received less attention; the monitoring, reflection, and evaluation were more superficial. *Retrospective* regulation was often unplanned, so no goal-setting or deliberate thinking about learning strategy and self-efficacy had been taken place. This kind of regulation focused on the monitoring, evaluation and reflection part of the learning process.

2.2. Student teachers' conceptions of learning and their relation with regulation activities

Research on students' conceptions of learning has started with the work of Säljö (1979), who found a hierarchy of five conceptions in which learning was conceptualised by students as: (a) increasing one's knowledge, (b) memorising and reproducing, (c) applying, (d) understanding, and (e) seeing something in a different way. This taxonomy was confirmed by a study of Marton, Dall'Alba, and Beaty (1993), who also added a sixth conception: (f) changing as a person. The first three conceptions describe quantitative views on learning in which learning is seen as reproduction of material which reflects a surface approach, and the latter three are more qualitative views and focus on the role of meaning in learning, reflecting a deep approach (Marton et al., 1993; Säljö, 1979). Reproduction-oriented learning versus meaning-oriented learning has remained the main dimension for describing individual differences in students' conceptions of learning. In the past decade also more context-specific conceptions of learning have been identified, resulting for example in descriptions of conceptions of web-based learning (Tsai, 2009) and conceptions of learning engineering (Lin & Tsai, 2009). Research on the conceptions of learning *to teach* is still scarce. Oosterheert and Vermunt (2001) studied student teachers' conceptions of learning in relation to their preferences for learning and regulation activities. The conceptions that they identified in the context of learning to teach included: learning by doing; developing a personal style by trial and error; improving teaching performance by shifts in objects of attention; and raising consciousness, addressing attention, integrating, and letting go. Further analysis identified that the main dimension underlying these conceptions of learning in relation to their preferences of learning and regulation activities was also reproduction-oriented learning versus meaning-oriented learning. Their study revealed that in the context of learning to teach, this dimension cannot be defined in terms of focusing on reproducing knowledge versus on understanding theories, but that reproduction-oriented learning is indicating whether student teachers are directed at improving performance through gathering (and reproducing) practical suggestions and that meaning-oriented learning implies learning by questioning and developing their frame of reference. In addition, a second dimension, open versus closed learning, showed differences in how student teachers approach their problems: whether they acknowledge their problems and try to find solutions independently or whether their problems remain more implicit and they need others to solve those (Oosterheert & Vermunt, 2001).

Although the relation between conceptions of learning and regulation activities has not been studied before in the domain of student teacher learning, we know from studies in the domain of Higher Education that self-regulation with a meaning-oriented conception of learning, or external regulation with a reproduction-oriented conception of learning, are combinations that occur most often and are theoretically coherent (Vermunt, 1998). Also the study of Endedijk and Vermunt (2013) showed that student teachers with a meaning-oriented learning pattern in general use significantly more often active regulation activities. On the other hand, research also has shown that when students enter a new learning environment, there may be a temporary misfit between their conceptions of learning and the learning activities that are required in this new environment (Brownlee, Purdie, & Boulton-Lewis, 2003; Vermunt & Vermetten, 2004). This misfit, or dissonance, occurs when students' conceptions of learning are not congruent with their learning activities (Cano, 2005; Vermunt & Verloop, 2000). Strong dissonant learning patterns are often related to poor academic performance (Beishuizen, Stoutjesdijk, & Van Putten, 1994; Cano, 2005; Vermunt & Verloop, 2000), whereas slightly dissonant learning patterns can be seen as good study practices that had been changed by the