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Teacher learning in the context of educational innovation: Learning activities and learning outcomes of experienced teachers

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Abstract

This longitudinal study was aimed at increasing our understanding of how teachers learn. It was conducted within a national innovation programme in secondary education. During one year 94 teachers reported six learning experiences using digital logs. The learning experiences were content-analysed in terms of learning activities and learning outcomes. The former comprised six main categories, namely experimenting, considering own practice, getting ideas from others, experiencing friction, struggling not to revert to old ways, and avoiding learning—the first two categories being reported most frequently. Reported learning outcomes referred to changes in knowledge and beliefs, emotions, practices, and intentions for practice, with changes in knowledge and beliefs being reported most frequently and changes in teaching practices being reported rarely. Learning activities were associated significantly with all measures of learning outcomes. Type of learning environment was significantly associated with learning activities and learning outcomes. Results are discussed with respect to ways of fostering teacher learning.

Keywords: Teacher learning; Professional learning; Workplace learning; Educational innovation; Self-regulated learning; Teacher professional development

1. Introduction

Teachers are supposed to be experts in learning. Although there is a lot of research on how teachers may promote student learning, the scarcity of systematic research on understanding and improving the learning processes of teachers themselves is striking. However, teachers are the most important agents in shaping education for students and in bringing about change and innovation in educational practices. Too often educational innovations have failed because they did not recognize the need for teacher learning (cf. Lieberman & Pointer Mace, 2008).

There is a growing awareness of the necessity of assisting teachers in their professional development. Numerous efforts are being made to enhance teacher learning, with varying degrees of success. Few of these efforts, however, are based on scientific understanding of how teachers learn at work (Beijaard, Korthagen, & Verloop, 2007). A sound conceptual framework for describing processes of teacher learning in professional practice does not yet exist. Moreover, systematic research on teacher learning is scarce. The present study aimed to contribute to such a conceptual framework by exploring secondary school teachers' learning activities and learning outcomes in the context of educational innovation.

Until recently, the study of learning mainly focused on student learning. Research on teacher learning focused on student teachers in initial teacher education (Oosterheert & Vermunt, 2001). In recent years some attention has been paid to the learning activities of experienced teachers in the workplace (Kwakman, 2003; Lohman & Woolf, 2001; Van Eekelen, Boshuizen, & Vermunt, 2005). These learning activities were, however, mostly characterized as concrete,

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visible activities, such as searching for information on the internet, exchanging ideas with colleagues, helping students during classroom activities, etc. The description of learning activities was not focused on teachers' thinking processes associated with their visible activities. Different teachers who are apparently engaged in the same visible activity may actually use quite different thinking processes leading to different learning outcomes. The present study focused on both the visible (overt) and covert learning activities that secondary school teachers engage in when confronted with educational innovation, on the learning outcomes teachers report, and on the relations between learning activities, learning outcomes, and type of learning environment.

1.1. Active and self-regulated student learning

A comprehensive introduction into active and self-regulated learning (ASRL) is beyond the scope of this article. In the scientific literature, a strong research base for the value of student ASRL can be found. Beginning with the pioneering work of Brown (1978) and Flavell (1979), over the last 30 years research on metacognition, self-regulation, and self-regulated learning has flourished (Alexander, 2008; Boekaerts, 2002). One line of research has focused on the metacognitive knowledge and beliefs learners have about their own cognitive functioning and related factors (the more static aspects of metacognition). Another line of research has focused on the more dynamic aspects of metacognition, that is, the actual, on-line regulation of learning processes, the skills learners need to self-regulate their learning processes and the metacognitive experiences associated with self-regulated learning (Efklides, 2006).

According to Pintrich (2004), most models of self-regulated learning (SRL) share four general assumptions: (a) the active, constructive assumption, according to which learners are viewed as active participants in the learning process; (b) the potential for control assumption, stating that learners can potentially monitor, control and regulate their own cognition, motivation and behaviour, as well as some environmental features; (c) the goal, criterion or standard assumption, stating that there is some kind of goal, criterion or standard against which the course of the learning process is assessed and decisions about continuation or adjustment are made; and (d) the assumption that self-regulatory activities are mediators between personal and contextual characteristics and actual achievement or performance. In his comprehensive framework for SRL, Pintrich (2004) discerns phases of SRL and areas for regulation. The phases correspond to the well-known ordering of consecutive self-regulatory activities: forethought, planning and activation (Phase 1); monitoring (Phase 2); control (Phase 3); and reaction and reflection (Phase 4). Areas for regulation include cognition, motivation/affect, behaviour and context. Several researchers have developed procedures and instruments to investigate SRL (Zimmerman, 2008), interventions to improve students' skill in SRL (Dignath & Büttner, 2008; Weinstein, Husman, & Dierking, 2000), comprehensive teaching models that incorporate fostering SRL (Boekaerts & Corno, 2005), or have broadened the concept of SRL to include cooperative learning and co-regulation (Volet, Summers, & Thurman, 2009).

Research on SRL is mostly focused on students at primary or secondary school level doing academic tasks in which the phases of SRL can be gone through in a time-ordered sequence. Within the SRL-perspective, student learning is often studied in a 'top-down' way, through the lens of theories or models of SRL (Pintrich, 2004). In the other main paradigm, the student approaches-to-learning perspective, student learning is mostly studied in a bottom-up way. In this perspective students' learning activities or approaches are studied through interviews, questionnaires of observations and categories of description are derived capturing the main similarities and differences found in the data, for example, by means of phenomenography or informed content analysis (Ellis, Goodyear, Calvo, & Prosser, 2008; Entwistle, McCune, & Scheja, 2006; Lonka, Olkinuora, & Mäkinen, 2004). Research on teacher learning and workplace learning is often conducted from a similar perspective as the approaches-to-learning perspective in student learning. Teacher learning studies from a SRL-perspective are rare, a few exceptions being the studies of Randi (2004) and Van Eekelen et al. (2005). Van Eekelen et al. (2005), for instance, showed that spontaneous teacher learning is almost never as planned and sequenced in a time-ordered sequence as models of SRL describe.

The roles that teachers are supposed to fulfil in teaching methods based on SRL are very different from those in more traditional, lecture-based teaching. In more traditional education teachers should be able to explain the subject-matter well, to regulate their students' learning and to motivate students to learn. In teaching methods based on ASRL, however, teachers are expected to fulfil roles such as diagnostician, challenger, model, and activator, and to monitor and reflect on students' learning processes (Vermunt & Verloop, 1999). They should be able to model metacognitive strategies for students, coach students in the acquisition of those strategies and fade their support when students become more proficient in their use (Collins, Brown, & Newman, 1989). Teachers should be able to design assignments, supervise project groups, coach cooperative learning, assess skills of self-regulated learning, etc. Elsewhere, this different pedagogy was described as process-oriented teaching (Vermunt, 1995); it is aimed at the integrated teaching of learning and thinking strategies, on the one hand, and domain-specific knowledge on the other. For many teachers this represents a fundamental change in their pedagogical role.

1.2. Teacher learning

What counts as good teaching is evidently subject to change. Shulman and Shulman (2004) developed a model of teaching with the following components: (a) *Vision*. A teacher must have a certain vision on teaching and student learning. (b) *Motivation*. A teacher must have the willingness and motivation to invest energy in a certain way of teaching. (c)