



How competent do teachers feel instructing self-regulated learning strategies? Development and validation of the teacher self-efficacy scale to implement self-regulated learning

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HIGHLIGHTS

- The scale development of an SRL teacher-efficacy scale (TSES-SRL) is reported.
- The TSES-SRL has an acceptable fit and can be used in further research on SRL.
- Teaching SRL is considered a distinct domain of functioning in classroom practice.
- Teachers feel more uncertain instructing SRL than more general classroom practices.

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ABSTRACT

This study describes the development of a self-report instrument: the Teacher Self-Efficacy Scale to implement Self-Regulated Learning (TSES-SRL). The TSES-SRL assesses teachers' perceived ability of implementing SRL as a specific instructional domain. The process of the item and scale development is presented. Exploratory factor analysis suggests a four-factor structure. Next, confirmatory factor analysis was performed and goodness of fit estimates were calculated, indicating an acceptable fit. Further, comparing the TSES-SRL to The Ohio State Teacher Efficacy Scale reveals the domain-specificity of the instrument. Overall, the TSES-SRL is considered a useful instrument to measure teachers' feelings of competence regarding SRL implementation.

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1. Introduction

In this 21st century knowledge economy, where a rapid growth in knowledge is ubiquitous, schools face the challenge of not only teaching students the substance of subjects but also the process of learning itself (James & McCormick, 2009). Therefore, teaching students to use learning strategies effectively has become a necessary practice of instruction in primary schools, that can be met through self-regulated learning (SRL) (Zimmerman & Schunk, 2001).

SRL refers to learners who are metacognitively, motivationally,

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and strategically engaged in learning (Winne & Perry, 2000). An increasing body of research literature on SRL states that SRL has a major impact on a student's academic success (e.g., Dent, 2013; Kistner, Rakoczy, Otto, Klieme, & Büttner, 2015; Montague, 2007; Schunk, 2008) and is an essential skill for lifelong learning (e.g., Boekaerts, 1999; Cornford, 2002). Therefore, the implementation of SRL is considered an important educational innovation that should play a key role in classroom practice (Boekaerts, 1999). However, the instruction of SRL occurs only to a limited extent (e.g., Dignath-van Ewijk, 2016; Lombaerts, Engels, & van Braak, 2009). The question therefore arises whether teachers lack the motivation, persistence, competence and effort to promote something as complex as SRL. In this respect and according to the social cognitive theory of Bandura (1997, 2006), teachers' individual beliefs regarding their own ability to attain certain educational goals is defined as teacher self-efficacy. Lacking the beliefs to activate students' SRL might be a barrier to actual SRL implementation (Peeters

et al., 2014).

The main purpose of the present study is to design and validate a scale, driven by theory, to measure teachers' self-efficacy beliefs regarding the implementation of SRL. To our knowledge, such a scale is currently lacking. Moreover, we also aim to identify that a specific teacher self-efficacy scale for SRL is conceptually different from self-efficacy in more general (e.g., classroom management, student engagement, etc.) domains.

2. Theoretical framework

2.1. Self-regulated learning

During the past decades, the concept of SRL has received growing attention in educational research and practice (Boekaerts, 1997; Bolhuis, 2003), as it is considered a constitutive of academic success (Winne, 1997). Moreover, numerous studies have convincingly indicated the importance of SRL for effective lifelong learning (e.g., Winne, 2005; Zimmerman, 2002) and as an important educational goal (e.g., Bolhuis, 2003).

Research agrees that SRL consists of three main components: metacognition, motivation and cognition (i.e., strategic action) (e.g., Schraw, Crippen, & Hartley, 2006; Vermunt & Verloop, 1999; Zimmerman, 1986, 2002). The metacognitive component refers to skills that enable students to understand and monitor their cognitive processes (Schraw et al., 2006) and covers learning activities such as planning (i.e., the selection of appropriate strategies), monitoring (i.e., checking comprehension by means of self-testing) and evaluation (i.e., judging both the learning process and the final learning outcomes) (Dignath & Büttner, 2008; Vermunt & Verloop, 1999). Self-regulated learners who exercise metacognition are self-conscious and able to use and adapt different learning processes depending on the circumstances in order to attain desired outcomes (Perry, 2013; Vermunt & Verloop, 1999).

Students address the motivational component of SRL when coping with emotions that arise during learning (Vermunt & Verloop, 1999). This refers to beliefs and attitudes that can affect the learning process, such as the value they place on personal progress and the willingness to attempt challenging tasks (Perry, 2013; Schraw et al., 2006). Motivating, concentrating, appraising, high attribution and dealing with emotions are examples of motivational learning strategies (Vermunt & Verloop, 1999).

Lastly, the behavioural or the strategic component refers to learning strategies that assist the learner in more effective processing, use and manipulation of information (Cornford, 2002). Learners strategically choose strategies from their personal repertoire (Perry, 2013). This repertoire can include skills such as structuring, memorizing, selecting and concretizing, employed to encode, memorise and recall information and optimize learning (Schraw et al., 2006; Vermunt & Verloop, 1999; Zimmerman, 2002).

In order to become self-regulated learners, students need to master a number of learning strategies that they can apply taking into account the varying contexts and needs of specific learning situations (Kistner et al., 2015). These strategies can be embedded in a common phased structure of the SRL process: processes preceding (i.e., forethought phase), during (i.e., performance phase) and after (i.e., self-reflection phase) the learning act (Lombaerts, Engels, & Athanasou, 2007; Zimmerman, 2000). However, mastering self-regulatory strategies does not develop automatically in all students. Yet, this can be trained by teachers (Boekaerts, 1997; Dignath & Büttner, 2008; Zimmerman, 2002). Moreover, the teacher's role in stimulating and promoting SRL is crucial, as students need a skilful model (Costa-Ferreira & Veiga-Simão, 2012). In this respect, researchers have agreed that the three components of

SRL should be an integral part of teachers' daily instructional strategies (Dignath-van Ewijk, Dickhäuser, & Büttner, 2013; Kramarski, Desoete, Bannert, Narciss, & Perry, 2013; Zimmerman, 2002).

As SRL is flexible and adaptable, students tend to construct their own repertoire of SRL strategies (Paris & Paris, 2001; Paris & Winograd, 1999). In this respect, teachers should adapt SRL instruction to the learner and pay attention to the way students interpret and engage with the given instruction (Paris & Winograd, 1999; Perry, 2013). Notwithstanding the differences between students, literature refers to two broad ways in which a teacher can directly instruct learning strategies, namely by means of implicit and explicit direct instruction (Kistner et al., 2010, 2015). Implicit strategy instruction occurs when teachers prompt students for strategic behaviour without addressing the strategic aspect of the behaviour or when teachers act as a role model without informing the learner about the strategic significance of this behaviour (Dignath-van Ewijk et al., 2013). However, teachers describing or modeling a strategy to students does not automatically mean that students will value and use this (Paris & Paris, 2001). Therefore, it is important that teachers also explicitly explain and/or demonstrate why (i.e., declarative knowledge), how (i.e., procedural knowledge) and when (i.e., conditional knowledge) it is important to use this strategy and how this can improve their performance (Kistner et al., 2015, 2010; Paris & Newman, 1990). Students should know that they are in fact learning a new SRL strategy, and should discuss on how to use, monitor and evaluate this (Kistner et al., 2010).

Another way teachers can foster SRL is in a more indirect way by creating a powerful learning environment that enables students to contribute actively to their learning process (Kistner et al., 2010; Paris & Paris, 2001; Perry, Phillips, & Dowler, 2004). According to Perry and colleagues, important features of a powerful learning environment (and accordingly of high-SRL classroom practices) provide students opportunities to: (1) engage in complex, meaningful activities that extend over multiple lessons; (2) make choices about what to work on, where, and with whom; (3) control challenges by deciding, for example, how much to write, at what pace, and with what level of support; and (4) be involved in setting evaluation criteria and reviewing and reflection on their learning (Perry & VandeKamp, 2000; Perry, 1998; Perry, VandeKamp, Mercer, & Nordby, 2002; Perry et al., 2004). Perry (2013), however, adds that tasks and instructional and social support should not be treated as static entities. Rather, teachers need to constantly pay attention to how students work and react to activities in order to give different students different opportunities to cultivate SRL strategies.

Despite the prominent role assigned to teachers in the research literature, teachers only rarely integrate SRL in their classroom because they face difficulties with implementing theory into practice (Kistner et al., 2010; Spruce & Bol, 2014). They mostly instruct SRL in a rather implicit way (Kistner et al., 2010) and instruct very few metacognitive strategies (Dignath-van Ewijk et al., 2013). Considering that direct explicit instruction is positively correlated with performance gains in students (Kistner et al., 2010), and metacognition is referred to as the most important skill in SRL (Muijs et al., 2014; Schraw et al., 2006), it is of utmost importance that teachers do learn how to instruct all components of SRL more explicitly. In addition, the learning environment is equally meaningful since it indirectly helps to create opportunities to practice the application of strategies (Paris & Paris, 2001). Therefore, teachers' promotion of SRL should involve both direct and indirect instruction (Dignath-van Ewijk et al., 2013). More specifically, Perry (2013) believes that high SRL classrooms should additionally have a teacher that also offers explicit instruction, extensive scaffolding and the support and structure needed in

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