More is more? Evaluation of interventions to foster self-regulated learning in college

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ABSTRACT

As self-regulated learning (SRL) is crucial for postsecondary academic success, the present study aimed to investigate how to foster this ability most effectively in college. Based on a $2 \times 2 \times 2$ control-group design, we analyzed effects of a content-independent SRL training, a learning diary, and their combination, which was hypothesized to be most effective. Pre-post and process measures of SRL, and an academic transfer measure, were used to evaluate intervention effects in 173 college students. Results indicated that the training positively influenced SRL, whereas the learning diary alone had no effects. The combination of both interventions produced the highest effect. Although effects were stable for eight weeks, no transfer effects were found. Practical implications can be deduced based on the present findings.

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1. Introduction

College students undergo a difficult transition after leaving school: Their learning environment changes from a strongly controlled to a less structured setting. This newly acquired autonomy, and potential feelings of loneliness, can lead to learning problems (Wei, Russell, & Zakalik, 2005). Self-regulated learning (hereafter referred to as SRL) is defined as "processes whereby learners personally activate and sustain cognitions, affects, and behaviors that are systematically oriented towards the attainment of personal goals" (Zimmerman, 2011; p. 1) and thus is of special importance for passing through the abovementioned transition successfully (Bembenutty, 2011). Despite SRL's positive relationship to academic achievement (e.g., Kitsantas, 2002), college students oftentimes lack SRL abilities (Peverly, Brobst, Graham, & Shaw, 2003). In this context, self-monitoring is helpful to optimize learning (Schmitz & Wiese, 2006) but is also used very rarely by college students (Lan, 2005). Therefore, the present study aims to evaluate different interventions to foster SRL in college students by disentangling the effects of directly training in SRL strategies, fostering self-monitoring and SRL through a learning diary, and combining both methods.

1.1. Components of an SRL process

Although there are many definitions of SRL, most authors agree that the construct embraces cognitive, metacognitive, and motivational components that interact reciprocally (e.g., Boekaerts, 1999). Zimmerman's social cognitive model (2000) describes SRL as a dynamic process that is cyclical in nature. The learner's active adaption to personal, behavioral, and

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environmental changes is central to this process. Feedback from previous actions hints at improvement opportunities and supports optimal goal achievement. The model therefore comprises three cyclical phases of forethought, performance, and self-reflection that are interdependent and linked through feedback loops (see Fig. 1).

The forethought phase starts with a task analysis that has to comprise goal setting (Pintrich, 2000) and strategic planning to support goal-directed performance. To initiate the learning activity, it is moreover necessary to engage in self-motivational beliefs. Besides intrinsic motivation, optimal goal orientations, and positive outcome expectations, self-efficacy (Bandura, 1997) constitutes a crucial component of the forethought phase.

The performance phase comprises volitional self-control techniques to overcome procrastination (Kuhl, 2000), to shield external distractions, and to support attention-focusing. The application of cognitive task strategies improves self-control (e.g., organizing or elaborating strategies; Pintrich, Smith, Garcia, & McKeachie, 1991). Additionally, self-observation is critical to the performance phase: The monitoring and self-recording of proceedings helps to detect discrepancies concerning a planned performance through feedback that is close to an actual performance (Bandura, 1986). This enables the learner to initiate adaptive behavioral and environmental changes and to optimize learning performance by using SRL strategies (Klug, Ogrin, Keller, Ihringer, & Schmitz, 2011). Consistently, self-monitoring results in better academic achievement (Webber, Scheuermann, McCall, & Coleman, 1993) and therefore is of special importance for the SRL cycle (see Section 1.3).

The subsequent phase of self-reflection supports future behavioral optimization through an assessment of preceding behavior. Self-judgments can be conducted by evaluative comparisons with previously set goals and by causal attributions (i.e., self-beliefs concerning the causes of action outcomes) that help to explain the (non-)achievement of a goal. Adaptive self-reactions that comprise inferences such as goal or strategy modifications have to follow in case of failure. Therefore, each learning cycle is influenced by preceding experiences and, in turn, influences subsequent learning processes. As Zimmerman's model (2000) contains many components that are trainable via strategy instruction, it is used as theoretical basis for many intervention studies (e.g., Perels, Dignath, & Schmitz, 2009) and as a framework for the present study as well.

1.2. SRL in college

Individuals using SRL strategies in all three phases of a learning cycle should be successful learners (Zimmerman, 2008). In fact, several studies have shown a relationship between SRL and academic achievement, especially for college students: High-achieving students report more SRL strategies before, during, and after test taking (Kitsantas, 2002), and they use more strategies that are different from each other than do lower-achieving students (Nandagopal & Ericsson, 2012). High-achieving students mainly use goal setting, planning, and organization strategies, as well as monitoring and self-reflection strategies, whereas students with lower test scores primarily use rehearsal and memorization strategies (Kitsantas, 2002). Concordantly, Liu et al. (2014) showed that college students with an adaptive profile of SRL strategy usage obtain better academic grades. Besides its influence on academic achievement, SRL is positively related to well-being (Park, Edmondson, & Lee, 2012) and negatively related to test anxiety of college students (e.g., Kesici, Baloglu, & Deniz, 2011). Therefore, several authors appreciate SRL as an important factor for successful postsecondary education that should be fostered (e.g., Bembenutty, 2011).
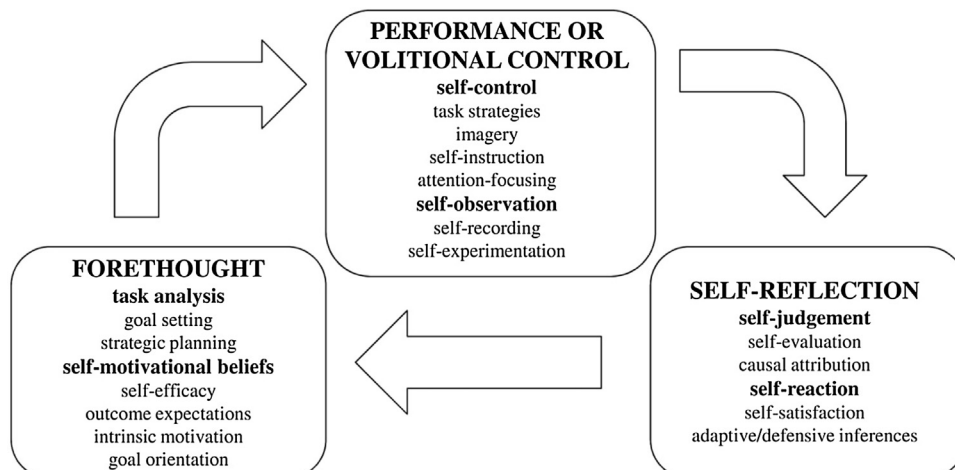

Fig. 1. Process-model of self-regulated learning (Zimmerman, 2000).