

# **PERSPECTIVES ON SELF-REGULATION RESEARCH IN EDUCATION: INTRODUCTION**

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Within the educational and educational psychology literature, the construct of self-regulated learning (SRL) has captured researchers' and educators' fascination about learners' adaptation to, active participation in, and mastery of the learning process. A vast body of research has documented the contribution of self-regulatory processes to learning and achievement, and higher levels of SRL have been found to be associated with more successful adaptation and better academic outcomes (e.g., Zimmerman & Schunk, 2011).

In recent years, significant progress has been made regarding theoretical and methodological issues related to self-regulation, SRL and practical applications in the classroom. Different theories of SRL, clarifications of the multiple processes and components that constitute SRL, the role of context in the development of self-regulation, and interventions aiming at promoting self-regulation in educational settings appeared in the literature (e.g., Bembenuddy, Cleary, & Kitsantas, 2013; Boekaerts, Pintrich, & Zeidner, 2000; Efklides, 2011; Hellenic Journal of Psychology, special issue 1(2), 2004). Furthermore, the construct of self-regulation is now employed in diverse fields and disciplines, such as clinical psychology, neuropsychology, science, and information technologies (e.g., Haagsma, Caplan, Peters, & Pieterse, 2013) that benefit by the fruitful research evidence stemming from educational psychology and education domains.

Although significant advances have been made, psychological and educational research and practice tied to SRL has still important issues to explore. Such issues include, among others, the emergence of self-regulation in early years, facilitating SRL in traditional and in computer-mediated instructional contexts, teachers' conceptualizations of SRL, teachers' own involvement in self-regulation towards professional growth, and new methods to assess SRL (Moos & Ringtal, 2013; Zimmerman, 2013). Recent special issues of scientific journals focusing on various aspects of SRL reflect these needs (e.g., Kramarski, Desoete, Bannert, Narciss, & Perry, 2013).

The present special issue is entitled "Perspectives on Self-Regulation Research in Education" and brings together five papers reflecting current research trends in the field of self-regulation in educational and developmental contexts. Exploratory studies, interventions, and research overviews are included. The articles deal with areas such as early problem-solving behavior, cognition, affect, learning and teaching processes in self-regulation with participants from various ages (early ages to adults). The emphasis is on academic settings and on different academic subjects/areas such as elementary school mathematics, physical education, and college students' learning with learning technologies.

Specifically, the first article by the Cambridge team (Kusalja, Basilio, Verma, & Whitebread, 2013) provides a critical overview of research on the mediating role of self-directed language (SDL) and private gestures (PG) in the early development of self-regulation. The authors attempt to expand the sociocultural tradition and bridge it with recent models of self-regulatory development. This is a relatively unexplored area and the role of semiotic systems, specifically the SDL and PG of infants and toddlers, in task performance, social-cognitive understanding and emotional and behavioral regulation is underlined. Moreover, the authors point out major limitations of research methodologies in this area. They argue, for example, that research has to move from relying on performance as a proxy for self-regulation to examining the actual co-occurrence of SDS and self-regulatory behavior. The authors describe an innovative microgenetic approach, called

tpattern analysis, for analysing temporal co-incidence of SDS and non-verbal behavior in very young children. The review concludes with suggestions and directions for future research.

Kolovelonis and Goudas (2013) present an overview of studies that applied Zimmerman's (2000) social cognitive model in physical education and sport in elementary and junior high school students. They firstly summarize evidence showing the efficiency of Zimmerman's (2000) four-level training model for self-regulation development. The four levels are: observation, emulation, self-control, and self-regulation. The authors point out that, although there is evidence regarding the sequential training of two or three levels, an overall evaluation of the four-levels model is currently missing. Then they go on to review research that employs self-regulatory skills such as goal setting, self-talk and peer-teaching within the four-level model. The relative effectiveness of various types of these skills, such as process versus product goals, motivational versus instructional self-talk, and peer versus self-teaching in the context of the four-level model of self-regulation are examined. Finally, the authors review research on student's calibration in learning sport skills and conclude that various factors are associated with calibration and that interventions designed to help students to improve their accuracy when estimating their performance is warranted.

Tzohar-Rozen and Kramarski (2013) present an intervention program aiming at promoting elementary students' affective self-regulatory skills within the context of school mathematics. The participants of the intervention group, that is, the affective self-regulation group, were trained through explicit training and through practicing self-questioning and affect management strategies during and after mathematical problem solving. The experimental and the control groups were pre- and post-tested on positive and negative emotions and on performance in mathematical literacy tasks. The results showed that students in the affective self-regulation group performed better in all aspects of the mathematical literacy tasks and showed a greater decrease in negative emotions than the control group. Students' reflective interviews after the intervention supported the effectiveness of the intervention. The contribution of the study is discussed with regard to students' enhancement of self-regulatory skills but also to teachers' training in fostering students' affective self-regulation.

The above mentioned papers examine self-regulation in preschoolers and in school aged students. Anastasia Kitsantas (2013) focuses on older students and discusses the role of the instructor in promoting college students' self-regulated learning with learning technologies. Within this growing field of research, the article presents a thorough analysis of innovative methods to teach students self-regulation skills through learning technologies. It is underlined that it is important to design effective computer based learning environments (CBLE) to facilitate student self-regulation and to know how to prompt students to use self-regulation processes with learning technologies within each phase of self-regulation. The article is grounded on Zimmerman's (2000) social cognitive model of self-regulation, and particularly on the cyclical model and the four-levels model. A detailed analysis of implementation and specific examples of teaching practices are offered illustrating how self-regulation can be supported through learning technologies.

Finally, moving from learners to instructors, the article by Chatzistamatiou and Dermitzaki (2013) deals with elementary school teachers' perceptions about self-regulatory strategy use in mathematics. The authors identified two groups of self-regulatory strategies, namely, strategies that the teachers use themselves in order to regulate their mathematics instruction and strategies that facilitate students' self-regulation in mathematics. Confirmatory factor analysis showed that these two self-regulation categories represent conceptually distinct factors. Teachers perceive as relatively distinct domains the strategies for teaching subject matter and for promoting their students' engagement in self-regulated learning. In addition, the authors tested the three phases cyclic model of self-regulation (Zimmerman, 2000).

The model was confirmed in the case of students' self-regulated learning in mathematics (i.e., strategies enacted before, during, and after learning) but not in the case of teachers' self-regulatory instruction. The study also investigated individual differences effects such as gender, teaching experience, and age on teachers' strategy use. Female teachers reported more use of strategies mainly in the forethought phase of self-regulated teaching of mathematics. The results of the study are discussed in relation to teachers' training and professional development.

Overall, the five papers in this issue make theoretical, methodological and applied contributions to the literature. They offer to the interested reader new perspectives, evidence and methodological approaches that reflect the most recent advances on self-regulation research in education. We hope that the articles included will contribute to our understanding and inspire future research in this field.

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