



THE CONCEPT OF SELF-REGULATION AND ITS PLACE AND IMPORTANCE IN EDUCATIONAL SCIENCES

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Abstract:

This study focuses on the concept of self-regulation and its position and significance in educational sciences. Self-regulation is a concept that involves individuals' ability to manage their behaviors, learning, and performance. The study emphasizes the role of self-regulation in educational sciences, aiming to understand the function of this skill in educational processes. Particularly, the research highlights the impact of self-regulation on learning processes and its applications in education. By examining the contributions of self-regulation skills to student achievement, motivation, and learning processes, the research aims to contribute to a better understanding of this crucial concept in education. The study provides recommendations for educators, researchers, and education policymakers to enhance the understanding of the concept of self-regulation and to effectively integrate it into educational processes. In this context, increasing awareness of the role of self-regulation in education and emphasizing usable strategies in practice can contribute to the improvement of educational systems.

Keywords: self-regulation, learning processes, behavioral management

1. Introduction

In the contemporary paradigm of education centered around learning, it is essential to design learning environments that cater to individual differences for the advancement of targeted skills. There has been a paradigm shift in society's perception of knowledge, prioritizing societies that excel in knowing how to access, create, and utilize information rather than merely memorizing it. Presently, education places greater emphasis on understanding how individuals learn, diverging from traditional concerns about how knowledge ought to be imparted. This shift has brought about a transformation in the desired qualities of education, aiming to nurture individuals capable of accessing,

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generating, and utilizing information. These individuals actively participate in their own learning, demonstrating the ability to learn, collaborate effectively, think critically, and democratically address challenges using scientific research methods. In this study, in line with the modern education paradigm, the focus will be on the self-regulation skill and its role in education.

2. Literature Review

a. Definition, Importance, and Content of the Self-regulation Concept

Bandura, initially part of Skinner's Behaviorist approach, didn't challenge classical conditioning supported by Skinner. However, he contended that learning doesn't always exclusively rely on reinforcement. Bandura argued that while behaviors are learned through the behaviorist's advocated operant conditioning, behavior change is a complex process emerging from cognitive and other unobservable psychological functions. He emphasized that behavior change is not merely a response to a reinforcement schedule but involves cognitive and higher cognitive processes influenced by an individual's thoughts and assessments of the reinforcement's meaning. Bandura posits that individuals learn by observing the behaviors of others, a concept he refers to as observational learning. However, learning is not simply mimicking the actions of others in one's environment; it also involves the cognitive processing of environmental events. Bandura underscores the idea that cognitive information processing happens when individuals deeply contemplate their own abilities and capacities. According to him, humans are entities that reflect on, assess, and control their own behaviors. Bandura terms the process of individuals observing, overseeing, guiding, and assessing their performances based on self-established criteria as self-regulation. Through self-regulation, individuals can effectively organize and adapt their behaviors. The concept of self-regulation, denoting an individual's ability to manage their own behaviors, holds a pivotal position in social cognitive theory. According to this theory, individuals do not automatically conform their behaviors to the interests and desires of others. Internal processes play a substantial role behind many organized behaviors. Social cognitive theory asserts that individuals have the capability to control their own behaviors. People autonomously decide how much effort they will invest, how much rest they will get, and how they will present themselves in society. The behaviors exhibited by individuals typically derive from their internal standards and motivations (Bandura, 1986).

In this perspective, individuals actively engage with their environment, emphasizing ongoing interaction instead of one-sided determinism advocated by behaviorists. The current situation influences an individual's thoughts, needs, and motivations, as they actively select and assess critical perceptions within their cognitive processes. Rather than reacting automatically to stimuli, cognitive interaction involves purposeful actions, whether in thoughts or behaviors. Humans actively process incoming information to comprehend themselves and their surroundings. The dynamic interplay between individuals and their psychological environment, according to cognitive interactionists, transforms observed information into meaningful internal

representations. Behavior, in this context, is a product of thoughtful consideration rather than an automatic response. As individuals and their environments change, the reinterpretation of the environment's meaning leads to altered interactions and the acquisition of new perspectives. In summary, it can be said that there is a dynamic relationship between the individual and their environment. Environmental events, personal factors, and behavior are determinants that mutually influence each other (Çelen, 2010). There is a dynamic interplay between individuals and their environment, where environmental events, personal factors, and behavior continually influence each other. Bandura and similar theorists emphasize the role of perception as an intermediary variable in human learning, shaping behavior based on meaningful cues and past experiences. Within the social cognitive learning theory, self-regulation involves individuals actively controlling their environment and taking responsibility for planning, monitoring, and evaluating their learning process (Bandura, 1986). Self-regulated learners, defined as individuals actively controlling and organizing their own learning processes cognitively, motivationally, and behaviorally (Zimmerman, 1989), are those who have the motivation to successfully complete a task, can set realistic goals for task completion, use effective strategies, engage in self-monitoring to measure effectiveness, and adjust or regulate strategy use when necessary (Zimmerman, 1989). Therefore, Zimmerman describes self-regulated learning as thoughts, feelings, and behaviors spontaneously generated by the learner toward achieving a goal. Learning is viewed not as a passive reaction to teaching but as an activity learners engage in proactively for their future. Consequently, self-regulation is seen as a self-directive process that enables learners to transform their cognitive abilities into academic performance skills, rather than being just a mental ability or academic performance skill (Zimmerman, 2002).

Additionally, self-efficacy is a significant factor in self-regulatory development, and the aim is to cultivate students who possess self-efficacy. It is a self-directed process that learners use to transform their cognitive abilities into academic skills, encompassing internal awareness, self-motivation, and behavioral skills to apply knowledge effectively (Zimmerman, 2002). Zimmerman and Schunk (2004) define self-regulated learning as systematically students' self-generated thoughts, feelings, and actions toward achieving their goals. In the past decade, it has been extensively researched. Many influential educational psychologists have proposed theoretical models and conducted cross-sectional and longitudinal studies to produce both theoretical and pragmatic information about self-regulated learning.

Winne (1995) defines self-regulated learning as inherently constructive and self-governing. Many leading educational psychologists (Alexander, 2008; Corno, 2012; Pressley, 1995; Schunk, 2005; Zimmerman, 2002) agree that progress has been made in identifying and explaining the fundamental processes of this complex structure. Researchers now have extensive knowledge about the processes self-regulated learners use to acquire new knowledge and skills and the environments in which self-regulated learning can be most successfully acquired (Boekaerts & Niemivirta, 2000; Randi & Corno, 2000; De Corte, Verschael & Op't Eynde, 2000; Pintrich, 2000; Zimmerman, 2002). To adapt to and even influence the changing conditions of the 21st century, it is necessary

to cultivate individuals who understand the era in which they live, can analyze the needs of society, think innovatively, access information easily and quickly, and, most importantly, make lifelong learning a lifestyle to meet the demands of the age. This undoubtedly happens by making the education system suitable for imparting 21st-century skills (Uçak & Erdem, 2020). It is crucial to adapt students, teachers, and the educational environment to this new situation. Because a teacher who lacks 21st-century skills and does not renew oneself cannot educate students different from themselves. Similarly, education given without a suitable physical and social environment is not likely to have a lasting impact.

According to Hasırcı (2018), educational environments are places where learners engage in educational communication, gain different experiences through activities, and interact in that environment. On the other hand, learning environments are as important as teachers in the education process. In an educational environment where education stakeholders are in constant communication, collaboration and feedback are widespread; learners inevitably reach the required quality of education (Çavdar & Doymuş, 2016). To establish a place in society and have a say, individuals who possess 21st-century skills and use them as an upper identity emerge as mechanisms for making correct decisions (Boyacı and Özer, 2019).

b. Self-regulated Learning

The concept of self-regulated learning began to be extensively used by researchers in the 1980s. However, research on the components of self-regulated learning, namely the effects of self-regulation processes on learning, started in the 1960s and 70s. When categorized, these studies reveal that some researchers focused on strategy instruction, while others conducted research on the role of motivation within self-regulated learning (Zimmerman and Schunk, 2011).

In the mid-1980s, Bandura (1986) extensively explained the Social Cognitive Learning Theory in his work, covering the self-regulation process. During the same period, Rohrkemper and Corno (1988), while not using the term self-regulated learning, discussed adaptable learning processes under the name of adaptive learning. Researchers evaluated teaching processes in classrooms and the student's position within the context from the perspective of the sociocultural approach (Perry & Rahim, 2011). After this period, self-regulated learning has been extensively discussed theoretically. During this time, various learning theories and approaches, such as the behavioral-operant approach, phenomenological perspective (McCombs, 2001), social cognitive learning theory (Bandura, 1986; Schunk, 2001; Zimmerman, 1989), information processing theory (Winne, 2005), sociocultural approach (McCaslin & Hickey, 2001), and constructivist approach (Paris, Byrnes, and Paris, 2001), have been interpreted in the context of self-regulated learning. As a result of these studies, self-regulated learning models have been developed, sometimes based on the assumptions and interpretations of a single theory and sometimes incorporating multiple theories.

When looking at the definitions of self-regulated learning, it is observed that the definition with the most citations in the field was provided by Schunk and Zimmerman

(1994). According to this definition, self-regulated learning is expressed as *"the systematic use of self-generated thoughts, feelings, and behaviors by an individual to achieve a specific goal"* (Schunk & Zimmerman, 1994). Building on this definition, Boekearts (2002) defines self-regulated learning as *"an initiative where the learner systematically uses self-generated thoughts, feelings, and behaviors to achieve personal goals, taking into account the current conditions."*

Pintrich defines self-regulated learning as *"an active and constructive process in which the learner sets goals, monitors, regulates, and controls cognitive states, motivation, and behaviors, guided and constrained by the set goals and characteristics of the context"*. As seen, all definitions emphasize the learner's mastery over the entire process. When looking at the definitions of self-regulated learning, it is observed that the definition with the most citations in the field was provided by Schunk and Zimmerman (1994). According to this definition, self-regulated learning is expressed as *"the systematic use of self-generated thoughts, feelings, and behaviors by an individual to achieve a specific goal"* (Schunk & Zimmerman, 1994). Building on this definition, Boekearts (2002) defines self-regulated learning as *"an initiative where the learner systematically uses self-generated thoughts, feelings, and behaviors to achieve personal goals, taking into account the current conditions."* Pintrich defines self-regulated learning as *"an active and constructive process in which the learner sets goals, monitors, regulates, and controls cognitive states, motivation, and behaviors, guided and constrained by the set goals and characteristics of the context"*. Students with developed self-regulated learning skills are aware of the requirements of challenging tasks they encounter and their level of readiness to meet these requirements (their strengths and weaknesses), as well as the strategies they can use to overcome a challenging task. In other words, they have developed metacognitive awareness. Additionally, these students believe in the potential development of their skills, focus on their personal growth and learning levels, are willing to engage in challenging tasks that contribute to the development of their skills, have a high level of self-efficacy perception, attribute the outcomes of their efforts to variables they can control, showing high motivation. Finally, when faced with challenging tasks, they strategically choose and implement what they consider the most appropriate strategy based on their knowledge and experience related to strategies; in other words, they act strategically (Perry & Drummond, 2002; Perry, Nordby & VandeKamp, 2003)

c. Components of Self-regulated Learning

Self-regulated learning, being an exceedingly intricate process, encompasses numerous components. The perception of self-regulated learning as intricate can be attributed to the multitude of its components, the diversity of relationships among these components, the distinct historical research background of almost every component, and the varied terminology used by researchers from different fields to describe these components and their interactions (Boekearts, 1999).

Due to the multitude of components in self-regulated learning, it is nearly impossible to find research that comprehensively addresses all the components of self-regulated learning and evaluates all relational processes together. However, in research

conducted to date, components that are considered to make significant contributions to the self-regulated learning process have been identified. These components can be broadly categorized into two groups: motivational structures and strategies. Many researchers have reached a consensus that motivation is a vital dimension of self-regulated learning (Boekaerts, 1995; Garcia & Pintrich, 2003; Gaskill & Woolfolk Hoy, 2002; Paulsen & Feldman, 2005; Pintrich, 1999; Rheinberg, Vollmeyer & Burns, 2000; Rozendaal, Minnaert & Boekaerts, 2003; Zimmerman, 2008; Zimmerman and Schunk, 2008). Indeed, assessments by experts in the field indicate that self-regulated learning goes beyond metacognition, which was predominantly emphasized in the early research.

In fact, Flavell's work in 1979, titled "Metacognition and Cognitive Monitoring: New Area of Cognitive-Developmental Inquiry," related metacognition and self-regulated learning through the concept of 'cognitive monitoring' (Griffith & Ruan, 2011). This approach was subsequently adopted by many researchers. Moreover, various motivational structures have been noted to significantly impact students' self-regulation capacities and the quality of their self-regulated learning (Pajares, 2002; Pintrich, 1999; Zimmerman, 2008).

In line with this perspective, Zimmerman and Schunk (2008), in their studies addressing the importance of motivation within self-regulated learning, emphasize that many interventions aimed at developing self-regulated learning skills, such as strategy instruction, have shown that students struggle to maintain the achieved levels. Consequently, they highlight the increasing significance of investigating motivational structures, including self-efficacy beliefs, attributions, goal orientations, outcome expectations, and their interactions, to enhance self-regulated learning skills. In conclusion, motivational structures, which hold a significant place among the components of self-regulated learning, occupy a crucial role in recent research. Below is information about the motivational structures included in this study. The second group constituting the components of self-regulated learning is strategies. Strategies can be further categorized into cognitive strategies, metacognitive strategies, and self-regulation strategies.

In fact, many studies in the field do not make a clear distinction between strategies. One of the main reasons for this is that researchers from different fields (cognitive psychology, developmental psychology, educational psychology, etc.) have different views on strategies. Each school of thought names the same events or phenomena differently, and even researchers working in the same field use different names, influenced by different thoughts and schools. For example, some researchers consider the questioning strategy as cognitive (Paris, Cross & Lipson, 1984; Rosenshine & Meister, 1994), while others categorize it as metacognitive strategies (Otero, 2009). Similarly, goal setting, cognitive strategy selection, and self-assessment strategies are referred to as metacognitive strategies in some studies and as self-regulation strategies in others (Butler et al., 2011; Butler and Cartier, 2004; Cary & Reder, 2002; Serra and Metcalfe, 2009). To minimize this confusion, studies evaluating both self-regulated learning (Azevedo & Hadwin, 2005; Winne, 2011; Zimmerman, 1990) and the historical origins of the concepts of 'metacognition,' 'self-regulation,' and 'self-regulated learning' (Azevedo, 2009;

Dinsmore, Alexander, and Loughlin, 2008; Fox & Riconscente, 2008) have been examined. As a result of the assessment, strategies other than metacognitive monitoring - for which there is no dispute that it is a metacognitive strategy - and strategies referred to as reading strategies in the literature have been grouped as cognitive strategies. Metacognitive strategies have also been subdivided into metacognitive monitoring and metacognitive control strategies based on the literature, with metacognitive control strategies further organized into goal setting, strategy selection, and self-assessment.

3. Results and Discussion

In conclusion, self-regulated learning is a complex and multifaceted process that involves various components such as motivational structures and strategies. The extensive research in this field highlights the significance of understanding and enhancing self-regulation skills for effective learning. Scholars have emphasized the interplay between motivation and self-regulation, recognizing motivation as a vital dimension of self-regulated learning (Boekaerts, 1995; Zimmerman, 2008). The literature suggests that self-regulated learners possess advanced skills in managing their cognitive, motivational, and behavioral aspects, allowing them to navigate challenging tasks with a high level of efficacy (Perry, 2006).

The discussion surrounding self-regulated learning has evolved over the years, acknowledging the dynamic nature of the process. Initially centered on metacognition and cognitive monitoring, the field expanded to incorporate motivational structures, recognizing their profound impact on the quality of self-regulation (Zimmerman & Schunk, 2008; Pintrich, 1999). Motivational elements, including self-efficacy, goal orientations, and outcome expectations, have been identified as influential factors shaping students' self-regulatory capacities (Pajares, 2002; Rheinberg et al., 2000; Zimmerman, 1995).

Moreover, recent research underscores the importance of integrating various motivational theories into the conceptualization of self-regulation (Zimmerman & Schunk, 2008). The Adaptive Learning Model by Boekaerts (2002) and the Social Cognitive Model of Self-Regulation by Zimmerman (2000) exemplify attempts to provide comprehensive frameworks for understanding the intricate relationships between motivation and self-regulation.

The delineation of self-regulation strategies further enriches the discussion. These strategies, categorized into cognitive, metacognitive, and self-regulation strategies, contribute to learners' ability to adapt and succeed in diverse learning environments (Azevedo & Hadwin, 2005; Winne, 2011; Zimmerman, 1990b). The diversity in terminology and categorization within the literature indicates the need for a unified approach to better comprehend the nuanced interplay of strategies within the self-regulated learning process.

In light of these discussions, it becomes evident that effective self-regulated learning involves a delicate balance between motivational structures and strategic approaches. The ongoing refinement of theoretical models and frameworks highlights

the evolving nature of our understanding of self-regulated learning. Future research should continue to explore the dynamic interactions between motivation and various strategies, ultimately contributing to the development of targeted interventions and educational practices that foster self-regulated learning in diverse contexts.

Conflict of Interest Statement

We, the authors, hereby declare that we have no conflicts of interest.

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