The Impact of Self-Regulated Learning Strategies on Academic Performance: A Systematic Review

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ABSTRACT: This systematic review explores the complex relationship between self-regulated learning (SRL) strategies and their impact on academic performance. The study uses rigorous methodology to analyze 25 articles selected from a comprehensive collection of literature to synthesize key themes. The review highlights that effective SRL strategies, such as goal setting, planning, monitoring, and adaptability, form the foundation for academic success. Cognitive and metacognitive engagement strategies, including rehearsal, elaboration, and organization, significantly enhance knowledge comprehension, retention, and application. Furthermore, motivation and emotional regulation, encompassing intrinsic motivation, emotion regulation, and self-efficacy, play a vital role in shaping students' attitudes, emotions, and behavior, ultimately influencing their academic performance. The synthesized framework comprehensively explains how these SRL components work harmoniously to optimize learning. These findings emphasize the importance of SRL in shaping successful educational experiences and have implications for educators and policymakers in enhancing learning environments. Future research can explore cross-cultural differences, longitudinal development, technology-mediated SRL, individual differences, effective teaching practices, and mixed-methods approaches to provide a more nuanced and comprehensive understanding of the relationship between SRL and academic performance.

1. INTRODUCTION

Self-regulated learning (SRL) strategies have garnered significant attention in educational research due to their potential impact on academic performance. SRL involves learners' active engagement in managing their learning process, which includes setting goals, planning, monitoring, and evaluating their progress (Zimmerman, 1986a). This proactive approach to learning equips students with the skills and strategies necessary for successful academic achievement.

Numerous studies have investigated the influence of SRL strategies on academic performance, providing valuable insights into the relationship between self-regulation and learning outcomes. For instance, a Dodge Solomon (2022) study explored self-regulation's effects on high school students' academic achievement. The findings revealed a positive correlation between students' use of self-regulatory strategies and their overall academic performance.

In addition to academic achievement, SRL strategies have been found to impact other aspects of learning. Alves et al. (2020) investigated the effects of self-regulated learning on metacognition and memory performance. Their study demonstrated that learners who engaged in self-regulatory practices exhibited better metacognitive awareness and improved memory recall than those who relied solely on external cues.

Moreover, SRL strategies have shown promise in enhancing learning outcomes across different educational domains. A meta-analysis conducted by Dignath et al. (2008) examined the impact of self-regulation interventions on academic achievement in primary and secondary education. The analysis encompassed a range of interventions targeting self-regulated learning, including goal setting, planning, and self-monitoring. The findings indicated a positive effect on academic performance, suggesting the potential benefits of incorporating SRL strategies into educational practices.

Furthermore, SRL strategies have been associated with positive outcomes in specific disciplines. For instance, a study by Mascardo et al. (2020) investigated the impact of self-regulation in Biology on self-regulated learning. The results revealed that students who employed self-regulatory techniques, such as goal-setting and self-monitoring, demonstrated higher levels of Biology performance.

Numerous studies have examined the impact of SRL strategies on academic performance across various educational settings and disciplines. These studies have provided valuable insights into the effectiveness of self-regulation in improving learning outcomes. However, a systematic review is necessary to synthesize the existing evidence and provide a comprehensive understanding of the relationship between SRL strategies and academic performance.

This systematic review aims to analyze and evaluate the available literature on the impact of self-regulated learning strategies on academic performance. By examining a wide range of studies, this review seeks to identify common trends, strengths, and limitations in the research conducted thus far. The findings will contribute to the existing body of knowledge and inform educators, policymakers, and practitioners about the potential benefits and implications of incorporating SRL strategies into educational practices.

2. METHOD

This review focuses on the impact of Self-regulated Learning Strategies on students' academic achievement, as evidenced by published papers. The study followed the systematic literature review methodology outlined by Okoli and Schabram (2010), with details of the procedure described in the subsequent sections.

Table 1 Systematic Literature Review Process

| Step	Description
Search Protocol	A comprehensive protocol was strictly followed, outlining the steps involved in the systematic review process. This included determining the location for searching the literature, defining search terms, establishing article screening procedures, and setting inclusion and exclusion criteria (Okoli & Schabram, 2010).
Search Protocol Execution	The literature search was conducted using the Dimensions database, known for its extensive coverage. "Dimensions is the most comprehensive database developed by Digital Science in collaboration with over 100 leading research organizations worldwide" (Patil, 2020, p. 2). The search was performed on July 10, 2023, using the keywords "Self-regulated learning" and "Student Achievement."
Practical Screening	Titles and abstracts were streamed to narrow the search results, yielding 297 hits. Specific filters based on language, field of research, publication type, and access type were applied. Articles in English, open-access domain, from 2019 to 2023 were included, resulting in the identification of 68 articles for further consideration.
Quality Appraisal	A detailed quality appraisal process was conducted. The team used a combination of formal and informal methods to assess the suitability and quality of papers. Initial screening excluded irrelevant articles. A full-text review evaluated quality and appropriateness, selecting 25. (The complete list of these 25 papers can be found in Appendix A)
Search and Selection Results	The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) methodology was followed. The PRISMA methodology summarized the selection procedure, including the number of studies included and excluded at each stage (Moher, 2009; Siddaway et al., 2019). Figure 1 shows the process of searching and screening literature (Moher et al., 2009). PRISMA (Siddaway et al., 2019) summarizes the included and excluded studies at each selection stage.
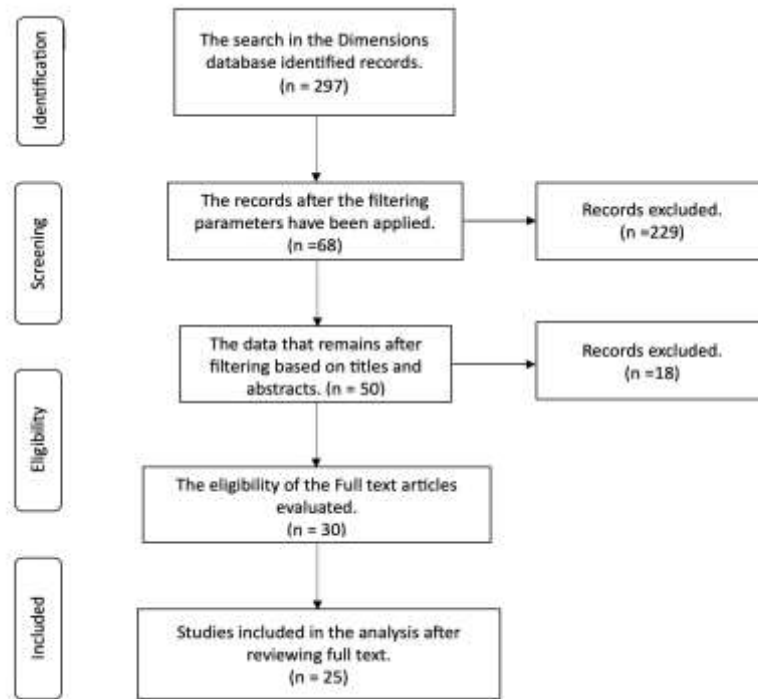
Figure 1. PRISMA diagram of the flow of the search and selection process

2.1. Synthesis of studies

After extracting data from various articles, the Excel spreadsheet was divided into four categories: (1) Key Terms, (2) defining SRL, (3) SRL Strategies, and (4) Impact of SRL on Academic Performance (Appendix B). The collected data were qualitatively analyzed using the web version of Atlas.ti, and a thematic analysis method was employed (Braun & Clarke, 2006). During this analysis, essential ideas were coded, categorized, and merged to create specific themes that logically explain the impact of SRL on academic performance. A framework was established based on these themes to illustrate the concept of SRL. The following presents and discusses the themes identified during the review process.
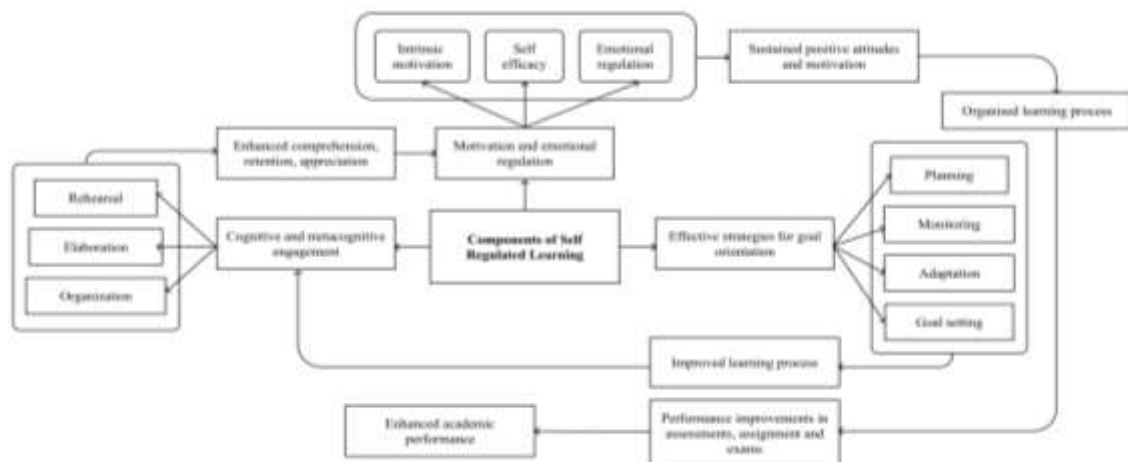
3. RESULTS AND DISCUSSION

Figure 2. The impact of Self-Regulated Learning (SRL) on academic performance

Figure 2 displays a framework that thoroughly explains the complex connection between Self-Regulated Learning (SRL) and Academic Performance. This model is based on insights gathered from previous research and demonstrates a well-organized combination of essential factors that shed light on how SRL impacts Academic Performance. The framework (Figure 2) shows that SRL significantly impacts academic achievement through interconnected themes. Each theme represents a different aspect of the relationship between self-regulation and learning. These themes are backed by empirical evidence, leading to an improved learning process. Studies by (Pekrun et al. (2011; Pintrich & De Groot (1990), and Zimmerman (1998) support these findings.

Achieving goals effectively requires implementing strategies that have been researched and proven to work. Pintrich and De Groot (1990) identified several components, including goal setting, planning, consistency in studying, effective learning strategies, coping mechanisms, and evaluation and adaptation.

Cognitive and metacognitive engagement, as outlined by Zimmerman (1998), involves several essential elements such as forethought, planning, activation, monitoring, control, reflection, metacognitive self-regulation, and effort regulation. Cognitive engagement strategies such as rehearsal, elaboration, organization, and critical thinking are essential in deepening comprehension and retention.

Motivation and emotional regulation are critical factors influencing a learner's emotional state and motivation to engage effectively in learning. (Pekrun et al. (2011) found that motivation strategies, knowledge about cognition and goal-orientation, metacognitive awareness and motivation, self-efficacy, enjoyment, anxiety, boredom, and burnout are all essential aspects to consider. By addressing these factors, learners can increase motivation and regulate emotions to achieve their goals effectively.

By focusing on interconnected themes, students can improve their comprehension, retention, and application of knowledge, according to Pintrich & De Groot (1990) and Zimmerman (1998). This improvement can lead to better performance on assessments, assignments, and exams, ultimately enhancing academic success (Pintrich & De Groot, 1990; Zimmerman, 1998; Pekrun et al., 2011). The continuous improvement cycle, supported by empirical evidence, shows how each stage reinforces the others, creating a holistic approach to achieving academic success (Pintrich & De Groot, 1990; Zimmerman, 1998; Pekrun et al., 2011). In the following explanation, we will detail each of these themes of the framework:

3.1. Effective Strategies for Goal Attainment

The previously presented framework (as depicted in Figure 2) emphasizes the importance of implementing effective strategies to attain academic success. Such strategies are vital in enhancing academic performance, as they provide a clear roadmap that encompasses goal setting, planning, monitoring, and adapting. By adhering to this roadmap, learners can navigate their educational journey more quickly and efficiently. This aligns with the assertions of Zimmerman (1986), who mentioned that goal-setting and strategic planning are crucial for self-regulated learning. These strategies provide structure and optimize time and resources. Zimmerman (2000) and Kim et al. (2020) offered insight into how students are motivated and process information during class. The focus was on the link between motivation and cognitive function, highlighting the value of aligning one's goals with effective learning techniques. By employing methods that cater to their specific objectives, students can increase their involvement in the learning experience, leading to enhanced academic achievement. Moreover, Hattie and Donoghue (2016) offer a comprehensive breakdown and conceptual framework of various learning strategies. This framework can serve as a valuable tool in your quest to better comprehend how different strategies work in harmony to improve learning outcomes. Hattie and Donoghue's (2016) findings have unveiled that learning strategies are fluid, and learners must be flexible in adapting their methods based on feedback and evolving circumstances. This perfectly aligns with the principles of monitoring and adjusting, as learners should assess their progress and modify their strategies accordingly.

The subtheme of goal setting is foundational within the framework, giving learners a compass to guide their educational trajectory. Students establish purpose and direction by formulating clear, achievable objectives; as Locke and Latham (1990) mentioned, learners have clear goals that guide their motivation, effort, and engagement in learning. Achieving these goals fosters a sense of accomplishment and a positive learning cycle. Furthermore, Watkins (2019) offers valuable information on the lasting effects of educational interventions aimed at goal-setting. It explores how setting specific goals can impact student outcomes long-term, highlighting the ongoing benefits of cultivating a mindset focused on achieving objectives. This supports the idea that clearly defined goals can enhance immediate motivation and positively change students' attitudes and behaviors. Sides and Cuevas (2020) have added a valuable social-psychological perspective to discuss educational goals and motivation. Their insights emphasize the interconnectedness of goals, motivation, and social context. While learners' internal factors shape their goals, external factors such as teacher feedback and peer perceptions also impact them. This underscores the importance of considering the broader educational environment when examining the effects of goal setting on students' learning experiences.

Practical strategies for cultivating organized and consistent study habits involve segmenting complex tasks into manageable steps, allocating time judiciously, and establishing a structured routine. As Pintrich and De Groot (1990) emphasized, an effective study plan promotes disciplined learning and improves time management skills, leading to efficient resource utilization. Nne et al. (2022) explore how goal specificity and planning affect academic performance. The findings highlight the relationship between clear goals and effective planning in promoting better learning outcomes. This emphasizes the significance of aligning planning with the specific goals of the learning process to enhance student success. Furthermore, Sides & Cuevas (2020) explore the complexities of planning in education. The study examines the advantages and drawbacks of using planning as a learning method. Though planning can improve the learning process, the research also highlights some possible disadvantages and constraints teachers and students should consider when planning techniques.

The monitoring theme includes tracking progress toward goals, aligning with benchmarks, and identifying areas for improvement. With the insights drawn from Winne and Perry (2000), learners can identify their strengths, areas for growth, and learning patterns through this introspective process. They are better equipped to make informed decisions about study strategies,

which foster a process of self-improvement. Pagani (2020) adds to our knowledge of how students monitor and regulate their learning. The researchers focused on the intricate details of how learners monitor their cognitive processes and metacognitive strategies. They discovered how students use self-assessment and reflection to regulate their learning actively. Granberg et al. (2021) offer insights into exploring the impact of self-monitoring and self-evaluation on self-regulated learning and achievement is a crucial undertaking. The insights gleaned from such research can provide invaluable information about the impact of these monitoring practices on students' academic results. This confirms that consistent self-assessment can enhance academic performance and enable individuals to cultivate effective learning methods.

Effective self-regulation includes adaptability as a critical strategy (Boekaerts & Cascallar, 2006). It illuminates that it is crucial to note that individuals who can adapt to changes possess diverse skills that aid them in navigating the ever-evolving learning landscape. This ability to adapt involves acknowledging the efficacy of current methodologies, actively seeking feedback, and making necessary modifications to enhance learning outcomes. Adaptability is closely intertwined with metacognition, which refers to the ability to regulate cognitive processes based on insights gained from prior experiences. Adaptability and metacognition are intricately connected when maximizing one's learning potential. Hagos and Andargie (2021) offer a developmental view of self-regulated learning and personal adaptation. The researchers emphasize that learners' capacity for strategy modification progresses, leading to a more refined and efficient learning method. Furthermore, Laka (2020) examined the broader regulation context in learning, which includes self-regulation, co-regulation, and socially shared regulation. It highlights the interrelated nature of these regulatory processes and how learners adjust and regulate their behaviors in diverse learning environments. The study supports the notion that adaptability is a personal undertaking involving interactions with peers and instructors.

In summary, the subthemes demonstrate how employing diverse strategies can effectively aid in attaining goals. When utilized in unison, goal setting, planning, monitoring, and adapting form a comprehensive self-regulatory system. By incorporating these practices into their routine, students can streamline their efforts, allocate their time efficiently, monitor their advancement, and modify their approach to optimize their academic performance.

3.2. Cognitive and Metacognitive Engagement

The notion of Cognitive and Metacognitive Engagement delves into the relationship between cognitive and metacognitive techniques, which are vital for optimizing learning regarding comprehension, retention, and practical application. This dynamic interplay is critical in fostering academic excellence via self-directed learning. The theme comprises rehearsal, elaboration, and organization subthemes, interlinked to create a fulfilling educational journey based on research and the expertise of renowned scholars.

According to Kang (2018), Mascardo et al. (2020), and Yuan (2022), engaging in rehearsal as a means of practice is a vital strategy for strengthening short-term memory and recall of information. Revisiting information at progressively longer intervals, known as spaced repetition, is a highly efficient method for enhancing retention. As demonstrated by Kornell and Bjork (2008) and Whitebread and Neale (2020), the psychological spacing effect shows that spacing out study sessions over time enhances long-term retention. Learners improve memory and understanding by actively engaging with material over time, revisiting it optimally. This emphasizes the importance of prolonged active engagement with content for robust learning outcomes, as Cepeda et al. (2006) and Knox (2022) highlighted.

An effective technique for acquiring knowledge is using elaboration. This involves linking novel information with pre-existing knowledge, enhancing comprehension, and superior retention. A deeper understanding of the subject matter can be achieved by relating new concepts to personal experiences or real-world examples. Studies have demonstrated that posing "why" inquiries to establish connections between facts, commonly called elaborative interrogation, can significantly enhance the information learned (Dunlosky et al., 2013; Farooq, 2019). Studies have shown that learners who verbally explain concepts to themselves, known as self-explanation, have better understanding and knowledge transfer (Ainsworth, 2003; Lachner et al., 2021). This approach encourages the active processing of information by articulating thought processes. Additionally, generating analogies and metaphors that connect abstract ideas to familiar concepts enhances learning (Hoadley, 2020; Ramos-Vega et al., 2021a). These findings underscore the value of actively connecting and encouraging learners to engage with content through various elaborative techniques.

Presenting information clearly and logically is essential to help learners better understand complex topics. This can be accomplished by grouping related concepts into meaningful hierarchies or categories. Visual aids, such as concept maps or outlines, can be beneficial in identifying the connections between ideas. Recent research has shown that graphic organizers can improve learning and retention (Colliot & Jamet, 2018; Ramos-Vega et al., 2021a). Additionally, retrieval practice has enhanced long-term retention and knowledge transfer by encouraging learners to recall information from memory actively (Ramos-Vega et al., 2021b; Wiklund-Hörnqvist et al., 2022). Mnemonic devices are another powerful tool for memorably organizing information and improving recall (Radović & Manzey, 2019; Wiklund-Hörnqvist et al., 2022). Effective organization strategies are critical for facilitating comprehension, retention, and application of information.

A dynamic approach to enhance the learning experience involves incorporating rehearsal, elaboration, and organization subthemes within the cognitive and metacognitive engagement in the framework (Figure 2). Rehearsal, which entails repeating information, facilitates knowledge transfer from working memory to long-term memory. Recent studies indicate that spaced

repetition is efficacious in improving retention. Elaboration promotes comprehension by encouraging learners to connect new information to existing knowledge. Techniques such as elaborative interrogation, self-explanation, and analogies facilitate a deeper understanding. Organization, which involves structuring information cohesively, empowers learners to navigate complex subjects. Techniques such as visual aids and mnemonic devices aid in comprehension, and research shows that retrieval practice is valuable for long-term retention. These subthemes are interwoven and create a robust fabric of learning when integrated. Learners actively engage with content over time, generate meaningful associations, and structure information effectively, fostering self-regulated learning and improving academic performance.

3.3. Motivation and Emotional Regulation

Motivation and Emotional Regulation in the framework shows how psychological factors impact the creation of effective learning environments. This emphasizes the importance of innate motivation, managing emotions, and self-confidence in shaping students' attitudes, emotions, and behavior, all of which ultimately contribute to improved academic performance. The themes of Intrinsic Motivation, Emotion Regulation, and Self-Efficacy are interconnected and provide a comprehensive understanding of how students' mental states influence their engagement and achievements throughout their academic journey.

Intrinsic motivation is a subtheme highlighting personal interest and passion's significant role in learning outcomes. Rooted in Deci and Ryan (1985) Self-Determination Theory, intrinsic motivation drives individuals to engage in their studies actively. Learners who find value and satisfaction in their tasks approach their studies enthusiastically and committedly. Deci and Ryan (1985) highlight how intrinsic motivation nurtures autonomy and self-determination, core components of effective learning. This subtheme aligns with the broader framework's goal of cultivating self-regulated learners who own their educational journey. Furthermore, recent studies within the last three years have affirmed the significance of intrinsic motivation in education. Research by Ryan and Deci (2020) demonstrated that students who experience high levels of intrinsic motivation tend to exhibit higher levels of academic engagement and achievement. Similarly, a study emphasized the role of intrinsic motivation in promoting self-regulated learning behaviors among students. This subtheme aligns with the broader framework's goal of cultivating self-regulated learners who own their educational journey, highlighting the enduring relevance of intrinsic motivation in enhancing learning outcomes.

Emotion regulation is the second sub-theme that deals with effectively managing emotions to create an ideal learning environment. Shafait and Huang (2022) emphasize the profound impact of emotional states on cognitive engagement and information processing. The ability to effectively manage one's emotions, particularly when confronted with negative feelings like anxiety and frustration, is essential for maintaining focus and resilience when tackling obstacles. By utilizing cognitive resources efficiently, learners can enhance their comprehension and retention of information. This aligns with the framework's emphasis on holistic wellness, acknowledging the interconnection between emotional well-being and academic success. A study by Quílez-Robres et al. (2023) demonstrated that students who receive training in emotion regulation skills show improvements in academic performance and overall well-being. Additionally, research by (Rivers et al., 2019) highlights the role of emotional intelligence in supporting effective emotion regulation, which in turn impacts learning outcomes. This subtheme emphasizes that fostering emotional intelligence and regulatory skills leads to a favorable learning environment, ultimately improving students' cognitive engagement and academic performance.

Self-efficacy influences learners' beliefs in their capabilities, bridging motivation and performance. Building on Bandura's Social Cognitive Theory, Bandura et al. (1999) mentioned that self-efficacy reflects individuals' confidence in their ability to achieve specific goals or tasks. Learners who believe in their ability to succeed approach their studies confidently, demonstrating proactive learning behaviors and perseverance when faced with obstacles. Bandura et al. (1999) note that self-efficacy enhances learners' efforts and improves academic achievement. This subtheme aligns seamlessly with the framework's overarching goal of empowering learners to take charge of their learning process. A study by Schunk and DiBenedetto (2021) highlighted the positive relationship between self-efficacy beliefs and academic achievement, emphasizing the role of self-efficacy in motivating sustained effort. Additionally, research by Capron et al. (2021) demonstrated that interventions to enhance self-efficacy can improve learning outcomes. Consistently, these findings highlight that developing self-efficacy beliefs gives learners the confidence and resilience to navigate their educational journey successfully. This aligns perfectly with the framework's goal of cultivating self-regulated and empowered learners.

The Motivation and Emotional Regulation theme highlights the significant correlation between students' emotions and academic achievements. When students possess robust internal motivation, effectively manage their emotions, and have confidence in their abilities, they are more likely to be actively engaged and successful learners. Therefore, learning environments must prioritize intrinsic motivation, impart emotional regulation skills, and foster students' self-esteem. These efforts empower students to approach their education confidently and enthusiastically, ultimately supporting the framework's (refer to Figure 2) objective of enhancing academic performance.

4. CONCLUSION

Self-regulated learning (SRL) strategies profoundly impact academic performance, and this systematic review delves into their complex and multifaceted relationship. This review uncovers key themes that provide insights into the dynamic interplay between

SRL and learning outcomes by analyzing diverse studies. The framework presented in this review eloquently illustrates how effective strategies for goal attainment, cognitive and metacognitive engagement, and motivation and emotional regulation work together to optimize the learning process, leading to an elevated level of academic performance.

The findings of this review reinforce the significance of SRL strategies in shaping successful educational experiences. Practical strategies like goal setting, planning, monitoring, and adaptability provide learners with a structured approach to their educational journey, allowing them to navigate their academic pursuits efficiently and effectively. Cognitive and metacognitive engagement strategies, like rehearsal, elaboration, and organization, augment the students' ability to comprehend, retain, and apply acquired knowledge. By actively and engagingly interacting with the educational content, learners can delve deeply into their subject matter, fostering a profound understanding that enriches their academic experience and bolsters their long-term retention.

Motivation and emotional regulation are pivotal elements of this holistic approach to education, encompassing intrinsic motivation, emotion regulation, and self-efficacy. These elements shape learners' attitudes, emotions, and behavior. Students who find value and satisfaction in their educational pursuits are driven by an intrinsic motivation that propels them to engage actively, enthusiastically, and with unwavering commitment. Emotion regulation enables learners to manage their emotional states effectively, empowers them to maintain focus and resilience, and optimizes their cognitive resources, improving comprehension and retention of educational material. Complementing these elements is the concept of self-efficacy, a belief in one's capability to achieve specific goals or tasks. Self-efficacy learners approach their studies confidently and determinedly, exhibiting proactive learning behaviors and unwavering perseverance in facing challenges.

This systematic review demonstrates how SRL strategies encompass a holistic approach to education, fostering academic excellence, personal growth, and lifelong learning skills. The symbiotic relationship between goal setting, cognitive and metacognitive engagement, and motivation and emotional regulation is an educational compass guiding students toward success. The findings underscore the transformative impact of SRL on educational experiences, offering profound insights to educators, policymakers, and researchers. Cultivating self-regulated learners with a foundation in SRL strategies will enhance academic performance and empower individuals for lifelong learning and personal development.

5. IMPLICATIONS

The systematic review has significant implications for educators, students, and the broader education community. Educators can use the findings to improve their teaching practices by explicitly teaching self-regulated learning (SRL) strategies. By incorporating SRL into the curriculum, students can become self-directed learners. Precise goal setting, effective study planning, and guidance on adapting learning approaches can significantly affect academic performance. Additionally, creating an environment that encourages intrinsic motivation, emotional regulation, and self-efficacy can contribute to a positive learning atmosphere that supports SRL.

For students, the implications are immediate and actionable. They can actively incorporate SRL strategies into their study routines. Students can enhance their academic performance by setting clear and achievable goals, creating study plans, consistently monitoring their progress, and adapting their strategies as needed. Developing emotional regulation skills, such as managing stress and anxiety, can help them maintain focus and resilience during their educational journey. Cultivating self-efficacy by setting and achieving small milestones can boost their confidence and determination.

Institutions and policymakers can use these implications to shape curriculum design and professional development programs for teachers. Promoting SRL at an institutional level can improve student outcomes and satisfaction. Educational policies emphasizing integrating SRL strategies into curricula can create a more self-directed and resilient student population, ultimately contributing to the overall quality of education.

Lastly, lifelong learners can apply these implications in various personal and professional development contexts. The skills and strategies discussed in this review are not limited to traditional academic settings. Professionals seeking to upskill or individuals pursuing personal growth can benefit from adopting SRL practices. These strategies can lead to more efficient and practical learning, enhancing their performance and adaptability in an ever-evolving knowledge-based society.

6. LIMITATIONS

It is important to note certain limitations of this review. Our analysis was restricted to studies published in the Dimension database and open-access domains, potentially excluding relevant research from subscription-based journals. Additionally, our examination was exclusively centered on English-language articles, which could introduce a language bias. Lastly, it is crucial to acknowledge that the synthesized framework is built on existing research and may not encompass every facet of the relationship between SRL and academic achievement.

7. RECOMMENDATIONS FOR FURTHER RESEARCH

Future research must investigate the effectiveness of self-regulated learning (SRL) strategies in diverse cultural and educational settings. Cross-cultural investigations can help understand SRL's universality and context-specific aspects, which can help tailor strategies for different cultural contexts.

Longitudinal studies can provide valuable insights into the progression of self-regulation skills at different educational stages. They can also show how SRL strategies develop over time and their long-term impact on academic performance.

Furthermore, research should delve into the role of technology in mediating SRL strategies, investigate the impact of individual differences on the efficacy of SRL, and explore pedagogical approaches that empower educators to foster SRL in students.

Employing mixed-methods research can provide a more holistic understanding of the complex dynamics between SRL strategies and academic outcomes. These research avenues will further enhance our comprehension of the relationship between SRL and academic success, guiding educational practice and policy.

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