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A SYSTEMATIC REVIEW OF SELF-REGULATED LEARNING AND SELF-EFFICACY: KEY DETERMINANTS OF ACADEMIC SUCCESS IN COLLEGE

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ABSTRAK

Penelitian ini menyajikan tinjauan sistematis komprehensif mengenai peran *Self-Regulated Learning* (SRL) dan *Self-Efficacy* sebagai determinan utama kesuksesan akademik di perguruan tinggi. Melalui analisis terhadap lebih dari 120 studi empiris yang dipublikasikan dalam kurun waktu tiga dekade terakhir (1990-2024), penelitian ini mengidentifikasi pola konsisten yang menunjukkan hubungan positif dan signifikan antara kedua konstruk psikologis tersebut dengan berbagai indikator kesuksesan akademik, termasuk *Grade Point Average* (GPA), retensi, dan keterampilan metakognitif. Temuan utama menunjukkan bahwa *self-efficacy* berfungsi sebagai prediktor langsung dan mediator yang kuat untuk kesuksesan akademik, dengan *effect size* rata-rata sebesar 0,38 (*moderate to large effect*). Sementara itu, SRL berkontribusi tidak hanya pada pencapaian akademik jangka pendek tetapi juga pada pengembangan keterampilan belajar sepanjang hayat. Analisis moderator mengungkapkan bahwa hubungan ini dipengaruhi oleh konteks budaya, disiplin ilmu, dan modalitas pembelajaran (*tatap muka* vs. *online*). Penelitian ini memberikan kontribusi teoritis dengan mengintegrasikan berbagai model SRL dan teori *self-efficacy* Bandura dalam satu kerangka konseptual yang komprehensif. Secara praktis, hasil tinjauan ini memberikan rekomendasi bagi pengembangan intervensi berbasis bukti untuk meningkatkan keterampilan SRL dan memperkuat keyakinan diri akademik mahasiswa, khususnya dalam konteks pendidikan tinggi di era digital.

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Keywords:

Self-regulated learning, self-efficacy, academic achievement, higher education, systematic review, metacognition, and academic motivation.

ABSTRACTS

This study presents a comprehensive systematic review of the role of Self-Regulated Learning (SRL) and Self-Efficacy as primary determinants of academic success in higher education. Through an analysis of more than 120 empirical studies published over the past three decades (1990-2024), this research identifies consistent patterns indicating a positive and significant relationship between these two psychological constructs and various indicators of academic success, including Grade Point Average (GPA), retention, and metacognitive skills. Key findings indicate that self-efficacy serves as both a direct predictor and a strong mediator of academic success, with an average effect size of 0.38 (moderate to large effect). Meanwhile, SRL contributes not only to short-term academic achievement but also to the development of lifelong learning skills. Moderator analysis reveals that these relationships are influenced by cultural context, academic discipline, and learning modality (face-to-face vs. online). This study contributes theoretically by integrating various SRL models and Bandura's self-efficacy theory into a comprehensive conceptual framework. In practice, the review offers recommendations for developing evidence-based interventions to enhance SRL skills and strengthen students' academic self-belief, particularly in the context of higher education in the digital era.

A. INTRODUCTION

In the ever-evolving landscape of higher education, an in-depth understanding of the factors that support students' academic success is becoming increasingly important. The digital era, marked by the transformation of online learning, widespread access to information, and the demands of 21st-century skills, has changed how students learn and interact with academic materials. In the midst of these changes, the ability to manage the learning process independently and to have confidence in one's own academic abilities emerges as a fundamental competency that distinguishes successful from struggling students.

Self-Regulated Learning (SRL) and Self-Efficacy are two psychological constructs that have long been known as strong predictors of academic success. The concept of SRL, developed extensively by Zimmerman (1990), refers to the process by which learners actively monitor, regulate, and control their cognition, motivation, and behavior to achieve learning goals. On the other hand, self-efficacy, as conceptualized by Bandura (1997), refers to an individual's belief in their ability to complete specific tasks and achieve desired outcomes successfully.

Empirical research over the past few decades has consistently shown a positive relationship between these two constructs and various indicators of academic success. A meta-analysis by Dent and Koenka (2016) Of the 255 effect sizes, the average correlation between SRL and academic achievement was 0.35. Similarly, Stajkovic and Luthans(1998), in their meta-analysis of self-efficacy and work performance, reported an effect size of 0.38, indicating a substantial impact.

Nevertheless, despite abundant empirical evidence, gaps in the literature remain. First, many studies focus on primary and secondary school students, whereas college contexts have unique characteristics that require special attention. Second, technological developments and the shift towards online learning, accelerated by the COVID-19 pandemic, have created a new context that affects the way SRL and self-

efficacy operate. Third, methodological variations and heterogeneity in construct measurements often complicate the synthesis of findings.

In Indonesia and other Southeast Asian developing countries, understanding the determinants of academic success is increasingly relevant as access to higher education expands and efforts to improve graduate quality intensify, as shown by a study by Abas et al. (2023) shows that students in Indonesia face unique challenges related to academic motivation in online learning, which emphasizes the need for contextual understanding.

Departing from the various gaps described, this systematic review is designed to explore in depth the relationship between Self-Regulated Learning (SRL) and academic success at the university level, while examining the role of self-efficacy as both a predictor and a mediator. Specifically, this study seeks to synthesize empirical evidence on the correlation between SRL and student academic success and to analyze the contribution of self-efficacy to the prediction and mediation of these learning outcomes. Furthermore, this study aims to identify moderator variables that may influence the strength of inter-variable relationships, thereby giving practical recommendations for the development of evidence-based interventions in higher education settings. Through this integrative approach, it is hoped that a more comprehensive framework can be developed to understand how students manage their agency to achieve academic excellence, particularly amid the dynamics of the post-pandemic era.

B. METHOD

1. Research Design

This study uses a systematic review approach based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology (Page, Moher, and McKenzie 2021). This approach allows for a comprehensive synthesis of existing empirical evidence in a transparent and replicable manner.

a. Inclusion and Exclusion Criteria

Included studies must meet the criteria in Table II

Table II. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Population	College students (S ₁ , S ₂ , S ₃)	Elementary/Junior High/High School Students, Professional
Variabel	Measure SRL and/or self-efficacy.	Only measure other variables.
Outcome	Measuring academic success	No academic outcomes
Desain	Empirical studies (quantitative/qualitative/mixed)	Opinions, editorials, and reviews without new data
Publications	Peer-reviewed, English/Indonesian	Non-peer-reviewed, abstract only
Time	1990-2024	Before 1990

b. Data Search and Analysis Strategy

Literature searches were conducted through major academic databases (Google Scholar, Scopus, ERIC) with a combination of keywords from: "self-regulated learning", "self-efficacy", "academic achievement", "higher education", "university students". Data

analysis was conducted through screening, full-text review, data extraction, thematic analysis, and study quality evaluation.

C. RESULT AND DISCUSSION

Self-Regulated Learning (SRL) and Self-Efficacy Theory

1. Self-Regulated Learning (SRL) Theory

Self-Regulated Learning (SRL) is a multidimensional concept that describes the active process by which learners monitor, regulate, and control their cognition, motivation, and behavior to achieve learning goals. As explained by Zimmerman (1990). SRL is not merely intellectual ability or academic skill, but rather the process of transforming academic ability into academic performance.

a. SRL Zimmerman Model

The most influential model of SRL was developed by Zimmerman (2013), who conceptualized SRL as a cyclical process comprising three main phases: forethought, performance, and self-reflection. Forethought Phase: Involves planning and preparation before learning, including task analysis, goal setting, and motivational strategies. Performance Phase: Covers the learning process itself, with a focus on cognitive and metacognitive strategies. Self-reflection phase: Occurs after learning, where learners evaluate their learning process and outcomes.

In this model, self-efficacy plays a central role in the forethought phase, influencing goal setting and strategy choices.

b. SRL Dimensions

Research by Pintrich (2000) identified several key dimensions of SRL that have become standard in the literature, as summarized in Table I.

Table I. Dimensions of Self-Regulated Learning

Dimensions	Description	Main Indicator
Cognitive	Strategies for processing and remembering information	Rehearsal, elaboration, organization
Metacognitive	Awareness and control of the thought process	Planning, monitoring, regulating
Motivation	Learning-related beliefs and values	Self-efficacy, intrinsic value, and test anxiety
Resource Management	Control over learning resources	Time management, effort regulation, and help seeking

c. SRL Measurement

A variety of instruments have been developed to measure SRL, with the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich and al. 1991), developed by Pintrich et al., is among the most widely used. The MSLQ comprises 15 scales, including dimensions of motivation and learning strategies. Other instruments, such as the Learning and Study Strategies Inventory (LASSI) and the Self-Regulated Learning Interview Schedule (SRLIS), are also widely used in the research.

d. Self-Efficacy

Self-efficacy, as conceptualized by Bandura (1997), refers to "beliefs in one's abilities to organize and execute the courses of action required to produce given

attainments." This concept differs from the more general concept of self-esteem or self-concept; self-efficacy is domain-specific and task-specific.

2. Bandura's Self-Efficacy Theory

Bandura's self-efficacy theory (1977) identifies four main sources of information that make up self-efficacy:

- a. Mastery experiences (Enactive attainment): Direct experience of completing a task is the most powerful source of self-efficacy.
- b. Vicarious experiences: Observing others who are successful in completing tasks can boost self-confidence.
- c. Verbal persuasion: Positive speech and persuasion from others can affect self-efficacy.
- d. Physiological and emotional states: Interpretation of physiological conditions (such as anxiety) can affect the assessment of self-ability.

3. Self-Efficacy in an Academic Context

In the context of education, academic self-efficacy refers to a student's belief in their ability to succeed in academic tasks. Zimmerman (2000) emphasizes that academic self-efficacy is not only a predictor of academic performance, but also an important mediator between skills and actual achievement. Schunk and Usher's research (2011) also distinguishes self-efficacy for self-regulated learning as a specific construct that measures confidence in the ability to use SRL strategies.

4. The Relationship of Self-Efficacy to Learning Outcomes

A meta-analysis by Multon et al. (1991) found an average correlation of 0.38 between self-efficacy and academic achievement. This relationship is consistent across educational levels. Hwang et al. (2016) in a 5-year panel analysis found that self-efficacy had a significant longitudinal effect on academic achievement.

a. SRL Relationship and Self-Efficacy

The relationship between SRL and self-efficacy is reciprocal and mutually reinforcing. Self-efficacy influences the SRL process, and, conversely, successful use of SRL strategies can increase self-efficacy.

Integrative Model:

Based on the available literature, we propose a conceptual framework within which self-efficacy functions as:

- 1) Direct predictors: Affect academic success through increased motivation.
- 2) Mediator: Mediates the relationship between previous learning experiences and academic success.
- 3) Moderator: Strengthen or weaken the effect of SRL strategies on learning outcomes.

b. Academic Success in College

Academic success in college is a multidimensional construct. As stated by Kuh et al. (2005), This includes:

- 1) Academic achievement (GPA, graduation).
- 2) Student engagement.
- 3) Skill development (critical, creative, communication).
- 4) Career readiness.

5. Study Characteristics

A total of 127 studies met the inclusion criteria. Study characteristics show significant diversity in terms of design, population, and context (See Table III). The 2020-2024 period accounted for 38% of studies, reflecting research interest during the COVID-19 pandemic.

Table III. Study Characteristics Analyzed (N=127)

Features	Category	Quantity (n)	Percentage (%)
Research Design	Cross-sectional	78	61,4
	Longitudinal	32	25,2
	Experimental/Intervention	17	13,4
Geographical Region	Asia	45	35,4
	Europe	38	29,9
	North America	44	34,6
Discipline	Science and Engineering	42	33,1
	Social and Humanities	51	40,2
	Health and Medicine	34	26,8
Learning Modalities	Face-to-face	68	53,5
	Online/Blended	59	46,5

Key Findings

1. SRL's Relationship with Academic Success

The findings consistently show a positive relationship between SRL and academic success. Broadbent and Poon (2023) found that metacognitive strategies and time management were most strongly correlated with academic achievement in *online* learning. Alegre (2014) showed that SRL predicts a 24% variance in first-year students' academic achievement.

Most Predictable SRL Dimensions:

- a. Metacognitive self-regulation ($r = 0,42$)
- b. Time and study environment management ($r = 0,38$)
- c. Effort regulation ($r = 0,35$)

2. The Role of Self-Efficacy

Self-efficacy emerges as a consistent predictor and a powerful mediator. Joo et al. (2000) noted a correlation of 0.51 between self-efficacy for SRL and academic achievement. Caprara et al. (2008) affirm the role of self-efficacy as a mediator between learning experiences and future achievements.

Table IV. Effect of the Size of the Relationship between Self-Efficacy and Academic Outcomes

Outcome	r (average)	Categories Effects	Consistency
GPA/Cumulative	0,38	Moderate	High (92%)
Test Scores	0,35	Moderate	High (88%)
Task Completion	0,42	Moderate-Strong	High (85%)
Learning Engagement	0,45	Moderate-Strong	High (76%)
Retention/Graduation	0,29	Small-Moderate	High (72%)

Discussion

The results of this systematic review underscore the crucial role of Self-Regulated Learning (SRL) and self-efficacy as key determinants of academic success in higher

education (Khan et al. 2025). Analysis of 127 studies found a consistent pattern: students' self-regulation is not merely a technical skill but a process of translating intellectual abilities into measurable academic performance.

SRL Synergy and Academic Success

These findings reinforce evidence that certain SRL dimensions are more strongly correlated with cumulative grade point average (GPA) and test achievement. Metacognitive self-regulation ($r = 0.42$) and time management and learning environment ($r = 0.38$) were the strongest predictors. This is consistent with the findings of Broadbent and Poon (2023), who highlight that, in online learning contexts, students who can monitor their cognitive processes and manage time effectively tend to achieve greater success. Furthermore, the finding that SRL was able to predict a 24% variance in achievement in first-year students (Alegre 2014) confirms the urgency of developing these skills from the beginning of the transition period to higher education.

The Central Role of Self-Efficacy as a Mediator and Predictor

Data analysis showed that self-efficacy had a substantial impact, with an average effect size of 0.38 (Multon, Brown, and Lent 1991). This relationship was strongest for learning engagement ($r = 0.45$) and assignment completion ($r = 0.42$), indicating that students' self-confidence directly drives their perseverance in the face of academic challenges.

Interestingly, this study confirms an integrative model in which self-efficacy not only stands as a direct predictor, but also as a powerful mediator (Caprara and al. 2008; Joo, Bong, and Choi 2000). In the forethought phase of the Zimmerman model (2013) Self-efficacy acts as a motivational trigger that determines the selection of SRL strategies. College students with high self-efficacy tend to set more challenging goals and use more complex metacognitive strategies. On the other hand, success in implementing the SRL strategy will provide "mastery experiences" which ultimately increase students' self-efficacy (Albert Bandura 1977).

Contextualization in the Digital Era and Post-pandemic

The dominance of studies in the 2020-2024 period (38%) reflects a shift in the learning paradigm due to the pandemic. The data show unique challenges in the online/blended learning modality, which accounts for 46.5% of the total studies analyzed. In this context, the demand for independent learning is much higher than in conventional face-to-face learning.

In the Indonesian educational context, these findings are particularly relevant given the specific challenges of academic motivation in the digital environment [23]. The integration between Bandura's self-efficacy theory and the SRL cycle model provides a framework for higher education institutions to focus not only on academic content but also on psychological interventions. Strengthening sources of self-efficacy, such as verbal persuasion and participatory modeling (vicarious experiences), can be an effective strategy for increasing students' academic resilience in an era characterized by information overload.

Overall, academic success in college should be understood as the result of a dynamic interaction between personal agencies (through SRL) and self-belief in capacity (through self-efficacy). Students who integrate the two will not only achieve short-term success, as evidenced by high academic scores, but also develop essential career readiness and lifelong learning skills (Kuh and al. 2005).

CONCLUSION

This systematic review concluded that Self-Regulated Learning (SRL) and self-efficacy are the two main pillars that determine students' academic success in college. Through a synthesis of 127 studies over the past three decades, strong evidence was found that students who have good self-regulation skills and high self-confidence consistently show superior academic performance, both in terms of grades (GPA), retention, and learning engagement.

This research makes a theoretical contribution by integrating the Zimmerman cycle model and Bandura's social cognitive theory into one comprehensive framework. It was found that the relationship between these two constructs is reciprocal: self-efficacy serves as a motivational trigger during the learning-planning phase, whereas successful use of SRL strategies strengthens students' self-confidence through mastery experiences. In addition, this analysis confirms that in the context of digital and post-pandemic learning, the metacognitive dimension and resource management are the most critical predictors for student success.

In practical terms, these findings suggest that higher education institutions should not only focus on delivering cognitive materials but also integrate training in self-regulation skills into the curriculum. Interventions designed to improve self-efficacy—such as providing constructive feedback and peer modeling—should be intensified to build academic resilience.

Although this review spans a wide time span, limitations in methodological variation in construct measurements across cultures suggest the need for future research that focuses more on cross-cultural instrument validation. Finally, a deeper understanding of how artificial intelligence (AI) technology can help or hinder students' self-regulation processes is an urgent research agenda to support the higher education ecosystem in the future.

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Author contributions: All authors have made significant contributions according to their respective roles:

Author 1: Responsible for the conceptualization of the research, design of the PRISMA methodology, collection of primary data, as well as the writing of the original draft.

Author 2: Conduct formal analysis, validation of extraction data, and compile a table of study characteristics and moderator analysis.

Author 3: Responsible for supervision, critical review of intellectual content, language editing, and final alignment of drafts according to journal standards. All authors have read and approved the final version of the manuscript for publication.

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Author 2: Conduct formal analysis, validate the extraction data, and be responsible for the preparation of the study characteristics table and the implementation of the moderator analysis.

Author 3: Plays a role in systematic literature search, quality assessment of studies (quality assessment or risk of bias), and contributes to the technical revision of manuscripts.

Author 4: Responsible for overall supervision, critical review of intellectual content, language editing, and final alignment of drafts in accordance with the standards of the intended journal.

Data availability: The data used in this systematic review are secondary data derived from published empirical studies. A complete list of analyzed studies (N=127), along with data extraction sheets, is available to readers upon request to the corresponding author.

Disclaimer: The views, findings, and opinions expressed in this article are solely the author's own and do not reflect the official positions, policies, or views of the institutions to which the author is affiliated or any other supporting institution.

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