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Systematic Review

Systematic Review of the Literature on Interventions to Improve Self-Regulation of Learning in First-Year University Students

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Abstract: Previous research has shown a significant percentage of dropouts in university studies, particularly in the first years. Furthermore, evidence links higher motivation and curricular improvement in students when they enhance their self-regulated learning (SRL). A systematic review was conducted using the PRISMA method to identify and analyze interventions to improve SRL in first-year undergraduate students. The interventions analyzed addressed student learning, classroom management by teachers, evaluation processes, and administrative management. Additionally, the need for a holistic and continuous approach was identified, covering cognitive, metacognitive, motivational, behavioral, and affective dimensions. The combination of self-perception questionnaires and academic grades was the most used strategy to measure intervention effectiveness. These findings emphasize the importance of adapting interventions to specific contexts and ensuring their continuity to maximize the impact on the development of students' self-regulated learning. The results reveal a high heterogeneity in the approaches applied, highlighting the most effective techniques as follows: specialized workshops, the use of virtual tools, and group and individual tutoring. Intracurricular interventions, integrated within course content and led by the faculty, demonstrated greater success by embedding SRL strategies into the teaching–learning process. In contrast, extracurricular interventions, conducted by tutors or academic advisors, faced challenges related to student motivation and participation.

Keywords: systematic review; self-regulated learning; university/higher studies; first-year students; tutorial intervention

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1. Introduction

Self-regulated learning (SRL) is a concept with multiple definitions (Hernández Barrios & Camargo Uribe, 2017; Zimmerman, 1986), representing a fundamental area of study within educational sciences. It explores how students take control of their learning process by setting goals; monitoring their progress; and regulating their cognitive, motivational, and behavioral strategies (Martínez, 2016; Schunk & Zimmerman, 2012). In a world increasingly characterized by ubiquitous information and rapid technological transformations, the ability to learn effectively and autonomously has become an indispensable skill for academic success in higher education (Fuentes et al., 2023).

The analysis of retention factors in higher education programs has become increasingly significant due to its critical impact on educational quality and the efficiency of educational systems (UNESCO, 2019). Universities have revised their approaches to teaching, research, and cultural dissemination to create an educational environment that supports student success and enhances retention rates (González Nieto & Rodríguez Hernández, 2023).

In the context of higher education, first-year students face significant challenges in adapting to academic demands, resulting in dropout rates as high as 54% in some regions globally, such as Latin America and the Caribbean (Galve-González et al., 2024). Among the factors influencing this phenomenon, self-regulated learning (SRL) has emerged as a critical determinant, closely associated with academic success and retention (Perez & Torres-Delgado, 2022). Evidence suggests that effective SRL strategies significantly enhance students' ability to persist in their studies, even under challenging circumstances. The COVID-19 pandemic has further underscored the importance of addressing SRL, as students reported heightened levels of stress and a lack of effective learning strategies during this period (Liebendörfer et al., 2023). Thus, identifying and implementing evidence-based interventions to enhance SRL among first-year students is both timely and essential, with potential benefits extending to improved academic performance, reduced dropout rates, and enhanced psychological well-being.

Given the high dropout rates observed in the early years of university, implementing effective self-regulated learning (SRL) interventions, both intracurricular and extracurricular, can play a crucial role in improving student retention and academic success. Additionally, SRL is connected to students' psychological constructs, addressing the processes through which they organize their environment, including activities, to engage in a self-motivated and autonomous improvement process (Hernández Barrios & Camargo Uribe, 2017).

Among SRL theories and models, perhaps the most influential is Zimmerman's model (Zimmerman, 2002), which defines three phases (planning, execution, and self-reflection) that assist students in their learning process. This model identifies variables such as information management, time management, behavior regulation, and study context adaptation, enabling students to develop strategies for information searching, organization, effective use, study time management, concentration, and environmental adaptation.

The self-determination theory (Deci & Ryan, 2000; Ryan & Vansteenkiste, 2023) emphasizes the role of autonomy, competence, and relatedness in fostering intrinsic motivation and self-regulation. It posits that environments supporting these three psychological needs enhance students' autonomous motivation, leading to improved self-regulation and academic outcomes. These interventions focus on creating autonomy-supportive environments to encourage SRL improvements (Brenner, 2022).

Metacognitive theory (Ryan & Vansteenkiste, 2023; Winne & Hadwin, 1998) focuses on the awareness and control of one's cognitive processes. Through phases encompassing task definition, goal setting, planning, task execution, and strategy adaptation, it promotes a shift in perspective, empowering students to establish goals, monitor their progress, and reflect on learning.

Finally, the social cognitive learning theory (Bandura, 2005, 2020) highlights the importance of observational learning, self-efficacy, and self-regulation in behavior change. Consistent with previous theories, it posits that self-regulation involves setting personal goals and monitoring, evaluating, and differentially reinforcing one's behavior. Belief in one's capabilities is a fundamental aspect of self-regulation.

The practical combination of these theoretical frameworks is identified as a determinant factor in student success or failure (Rosário et al., 2014), especially during the first year of undergraduate studies (Álvarez-Pérez & López-Aguilar, 2021; Fernández et al., 2013; Llauró et al., 2023), a period typically marked by students' adaptation to academic

levels, content, and pace. There is a significant correlation between SRL skills and academic performance, with students effectively managing their learning and achieving better results (Pintrich, 2004; Zimmerman, 2002). Moreover, SRL has been associated with higher levels of motivation and educational satisfaction, underscoring its relevance not only for academic success but also for well-being (Deci & Ryan, 2000; Dweck, 2006), stress reduction, and anxiety management through effective time and resource management (Tuckman, 1998).

The main dimensions that define SRL focus on how students set goals and monitor and regulate their cognition, motivation, and behavior in the context of learning. These dimensions are identified as follows:

- Cognition: This dimension examines the selection and application of cognitive strategies such as elaboration, organization, repetition, and resource management strategies (Weinstein et al., 2011).
- Metacognition: This dimension includes planning, monitoring, and evaluating one's comprehension and performance. Students reflect on their learning, set goals, use strategies to achieve those goals, and evaluate their progress (Zimmerman, 2002).
- Motivation: This dimension refers to students' beliefs about their capabilities and expectations of success (self-efficacy), the value they assign to tasks, and their goal orientation (Deci & Ryan, 2000; Locke & Latham, 2002).
- Behavioral: Maintaining focus and effort toward goals despite distractions and setbacks. This includes time management, environment management, and perseverance, as encapsulated in the concept of "mindset" developed by (Dweck, 2006).
- Affective: The ability to manage emotions that can impact learning, such as stress, anxiety, or boredom (Pekrun et al., 2002).

This review, based on the PRISMA method, initially presents a series of generic descriptive results (classification by year, country, publication, etc.). In its analytical phase, it provides a current overview (2019–2024) of published research that has designed and implemented interventions to improve first-year undergraduate students' SRL through academic tutoring and support. This focus on academic tutoring and support is the distinctive feature of this proposal compared to previous reviews. The literature highlights evidence of the usefulness and necessity of SRL, as well as systematic reviews centered on SRL evaluation processes or linked to specific methodologies or technologies (Broadbent & Poon, 2015; Devolder et al., 2012; Rosário et al., 2014; Roth et al., 2016; Su et al., 2023; Theobald, 2021). However, these studies have not analyzed interventions aimed at improving SRL through academic and/or university guidance, a crucial support identified in the last decade as part of a wide array of new learning models and ecosystems (Fonseca & García-Peñalvo, 2019).

The justification for this review lies in the increasing need for support expressed by students following the COVID-19 pandemic (Fruehwirth et al., 2021; Gestsdottir et al., 2021), given the emotional and academic impact of this crisis on students (Nandy et al., 2021; Salimi et al., 2023), especially those undergoing an educational transition, such as first-year students (Fidalgo-Blanco et al., 2022; Palomera-Chávez et al., 2021; Salinas-Rodríguez et al., 2022). It is in the first year that it becomes essential to understand all the variables influencing the risk of early dropout to mitigate it (Fonseca et al., 2017; Llauró et al., 2021, 2023). In line with the novelty and justification of this review and to contextualize, adjust, and offer future work directions based on it, we aim to explore the most effective academic tutoring and mentoring interventions that enhance self-regulated learning (SRL) among first-year undergraduate students, framed within the PICO methodology. This approach ensures a structured analysis, considering the specific population, interventions, and expected outcomes.

This review aims at answering the following research questions: What are the most effective interventions in academic tutoring and mentoring that enhance self-regulated

learning (SRL) among first-year undergraduate students? Therefore, this research question requires the following PICO framework:

- P (population): First-year undergraduate students.
- I (intervention): Interventions and guidance from tutorial activities and mentoring.
- C (comparison): No specific comparison group was applied in this review.
- (Outcome): Improvement in self-regulated learning (SRL) processes.

After this review, we will obtain primarily the following two outcomes:

- O1: Identify interventions aimed at improving SRL in first-year undergraduate students through tutoring, guidance, and/or academic support.
- O2: Identify successful interventions, as well as their agents, procedures, and intervention tools.

2. Methodology

The systematic review was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method (Page et al., 2021), a tool designed to ensure transparency and rigor in systematic reviews. A qualitative synthesis of available evidence was performed, derived from the research question formulated using the PICO strategy (Briggs, 2017). Inclusion and exclusion criteria were rigorously defined, using the PICO strategy, to ensure that the studies selected for this review aligned with the research objectives.

To enhance this review's rigor, the Critical Appraisal Skills Program (CASP, 2022) checklist and the Joanna Briggs Institute (JBI) (Briggs, 2017) critical appraisal tool were used to assess the quality and reliability of the included studies. These tools ensured methodological rigor by evaluating the study design, data collection, and analysis methods, providing a comprehensive assessment of their relevance and validity.

2.1. Search Strategy

The search was conducted in four academic databases—SCOPUS®, Web of Science (WoS)®, ERIC®, and SCIELO®—with a temporal scope up to July 2024, with the keywords as follows: ("higher education" or universit* or college or Postsecondary or Tertiary) and (freshmen or "first year" or junior) and ("self-regul*" or "self regul*" or SRL) and (tutor* or ment* or orient* or accompan* or guid* or coach*) and (intervent* or plan* or initiat* or program* or promot* or support* or foster* or develop* or encourag*). An asterisk (*) was added to those keywords that could have a common root in synonyms or derivatives to cover all possible meanings. The search syntax is generic, using OR for complementary or synonymous terms and AND for necessarily related aspects, linking the different premises defined in the PICO question. Depending on the database and its options, the search syntax may vary slightly.

The search and selection process are summarized in Table 1, detailing the specific criteria used to ensure the study's transparency, validity, and replicability.

Table 1. Terms and complete search strategy across databases.

Population (P)		Intervention (I)		Outcome (O)
Higher education University College Postsecondary Tertiary	First year Freshmen Junior	Intervent* Tutor* Ment* Orient* Accompan* Guid*	program* promot* support* foster* develop* encourag*	Self-regul* Self regul* SRL

2.2. Inclusion and Exclusion Criteria

All types of interventions (quantitative, qualitative, and mixed) conducted through academic guidance or tutoring activities for first-year undergraduate students, to facilitate the process of self-regulated learning (SRL), were included. Studies were excluded based on the following criteria: (1) studies outside the university setting, early childhood, primary, secondary education, vocational training, or non-formal education; (2) studies focusing on students beyond first-year undergraduate students; (3) studies with interventions unrelated to university guidance or SRL; (4) studies with other types of interventions aimed at objectives not related to self-regulation.

Studies published in languages other than English or Spanish were excluded to ensure consistent comprehension and analysis. Additionally, studies published before 2019 were excluded to focus on recent and relevant findings aligned with the evolving landscape of self-regulated learning interventions. Conference papers, reports, dissertations, book chapters, books, and other document types were also excluded to maintain a consistent standard of peer-reviewed academic sources.

The inclusion and exclusion criteria for the studies (see Table 2) were also formulated using the PICO strategy (Methley et al., 2014).

Table 2. Inclusion and exclusion criteria using the PICO strategy.

Criteria	Population		Intervention	Outcomes
Inclusion	University	First-year undergraduate students	Academic tutoring, guidance	Self-regulated learning
Exclusion	Early childhood, primary, secondary education, vocational training, or non-formal education	Students from other years, postgraduate, or doctoral levels	Interventions unrelated to university guidance or SRL	Other types of interventions aimed at objectives not related to self-regulation

2.3. Study Selection Process

The study selection process followed the systematic framework outlined in the PRISMA guidelines. The process was conducted as follows:

(1) Identification: A senior researcher conducted an initial search across four academic databases—SCOPUS®, Web of Science (WoS)®, ERIC®, and SCIELO®—to ensure unbiased standardization across all databases.
(2) Screening: In a subsequent iterative and collaborative phase, two senior researchers compiled all records and removed duplicates, as well as the gray literature, to create a preliminary dataset.
(3) Eligibility: Titles and abstracts of the identified studies were reviewed in a collaborative and iterative process involving all the authors of the study. This stage aimed to exclude studies unrelated to the research objectives or not meeting the inclusion criteria.
(4) Inclusion: A final set of 23 studies were selected for full-text qualitative synthesis based on their relevance, methodological quality, and alignment with the research objectives. This phase was also carried out collaboratively by two authors, ensuring consistency and thorough evaluation.

The collaborative work was conducted remotely through videoconferencing, with authors sharing a common Excel database to document all decisions systematically. This approach ensured transparency and consistency throughout the process. Detailed infor-

mation on the excluded studies and the reasons for exclusion are provided in the PRISMA flow diagram included in the Section 3.

2.4. Quality Assessment and Risk of Bias

To ensure the quality and validity of this review, the studies were evaluated using the 11 quality criteria for systematic reviews from the Joanna Briggs Institute (Briggs, 2017):

(1) Clearly defined inclusion criteria.
(2) Adequate and comprehensive search strategy.
(3) Detailed description of study selection.
(4) Assessment of the quality of included studies.
(5) Rigorous analysis of extracted data.
(6) Clarity in the presentation of results.
(7) Evaluation of potential biases.
(8) Appropriate methodological design.
(9) Consistency in the interpretation of results.
(10) Consideration of contextual and applicability factors.
(11) Conclusions based on the data presented.

To ensure the quality of the selected publications, the CASP (Critical Appraisal Skills Program) checklist was used (Methley et al., 2014). The CASP checklist is a widely recognized tool designed to systematically evaluate the quality of research studies, ensuring their validity, reliability, and relevance. The CASP evaluation process involves a series of questions tailored to different types of studies (e.g., qualitative studies, randomized controlled trials, systematic reviews). For this systematic review, the following key criteria were applied:

(1) Clarity of the Research Aim: Is the aim of the study clearly stated and relevant to the research question?
(2) Appropriate Methodology: Is the chosen methodology suitable for addressing the research aim?
(3) Research Design: Does the study design align with the research objectives?
(4) Recruitment Strategy: Is the recruitment process clearly described and appropriate?
(5) Data Collection: Are the data collection methods adequately detailed and justified?
(6) Relationship Between Researcher and Participants: Is the researcher's role and potential bias considered?
(7) Ethical Considerations: Were ethical issues addressed, including informed consent and approval by ethics committees?
(8) Data Analysis: Are data analysis methods rigorous and appropriate?
(9) Clear Statement of Findings: Are the findings presented, and do they address the research question?
(10) Value of the Research: Does the study contribute to existing knowledge, and are its implications discussed?
(11) Relevance and Applicability: Are the results applicable to the target population and context?

All the identified articles met these quality standards, ensuring the robustness and reliability of the evidence included in this systematic review.

3. Results

As previously noted, the distinguishing factor of this study lies in tutorial action or academic guidance/support being a complementary approach to the teacher's role within the instructional practice of their specific subject. The definition of the tutor's

role is broad, and although it originates from classical times, it gained prominence in Anglo-Saxon countries and pre-university education during the early 20th century. In the 1970s, certain countries established the right for students to have a tutor and receive personalized attention. However, it was not until the 21st century that tutoring expanded to more academic levels, defining its activities with a more social and student-supportive perspective (Álvarez González, 2008; Llauró Moliner, 2024).

Following the previously mentioned inclusion and exclusion criteria (Table 2), the following results were obtained in relation to the process described in Section 2.3:

(1) Identification: A total of 462 studies were identified across four databases: SCOPUS®: 252 documents based on title, abstract, and keywords; WOS®: 100 documents based on the topic (title, abstract, keywords); ERIC®: 102 documents from full texts; SCIELO®: 8 documents based on the topic (title, abstract, keywords).

(2) Screening: A total of 126 records were excluded for being conference papers, reports, dissertations, book chapters, books, or other document types. After removing duplicates and limiting the review period, 336 studies remained. All references were downloaded into a spreadsheet, enabling the elimination of 67 duplicates and 152 studies published before 2019. Consequently, the pool of studies for review comprised 117 articles.

(3) Eligibility: A total of 94 articles were excluded, leaving 23 articles for the systematic review presented here, as illustrated in Figure 1.

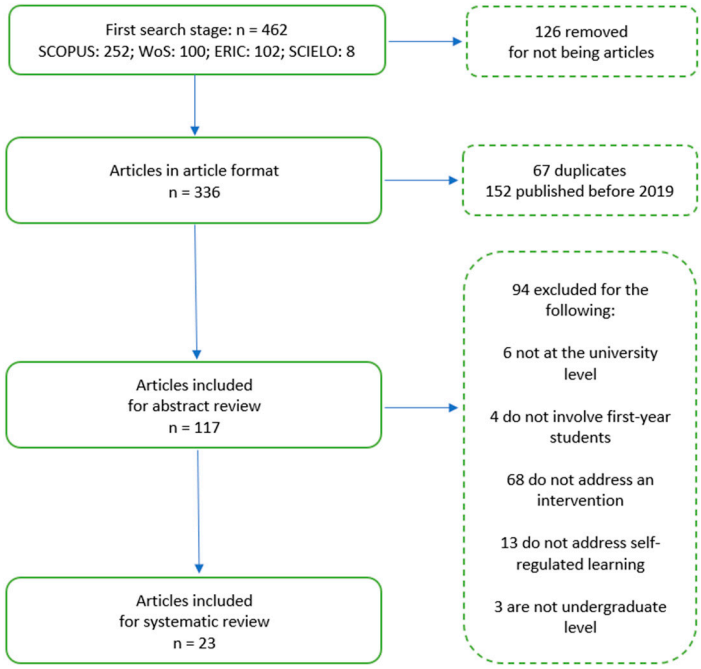

Figure 1. Diagram of the search and selection process of the analyzed sources. Source: own elaboration.

In a general analysis of the 23 selected articles published in indexed journals over the past five and a half years (2019–June 2024), we observed an average of slightly more than four articles per year. Nine articles (39%) were published by Anglo-Saxon institutions, followed by five from Latin America (21%), with notable contributions from Eastern Europe (12%), Western Europe (8%), and Asia (17%). Most studies appeared in education journals, both field-specific and general ones (16 articles, 69%); followed by psychology journals (4 articles, 17%); and finally, other interdisciplinary journals.

Table 3 presents the author and year of publication, the country of study, the specific sample that ultimately participated in the intervention, and a brief description of the objectives and results of the articles selected for in-depth analysis.

Table 3. Author, year, country, sample of the study, objectives, and results of the selected articles. N/A: not available.

Author, Year	Country	Sample	Objectives	Results
(Alsuwaidi et al., 2023)	United Arab Emirates	28	Effectiveness of an intervention on self-regulation in first-year medical students.	Academic performance significantly improved in the first year but decreased in the second year. Need for program continuity.
(Carpenter & Hodges, 2024)	United States	N/A	Effectiveness of spaced practice in self-regulation in chemistry students during the COVID-19 pandemic.	Improved for voluntary students but less for mandatory ones.
(David et al., 2024)	The Netherlands	29	Effectiveness of an intervention for effective study habits in first-year university students.	Students demonstrated knowledge of effective strategies, but motivation and short-term goals hindered implementation.
(Fernández-Martín et al., 2019)	Spain	48	Impact of a service-learning and peer-tutoring program on self-regulation in first-year students and senior tutors.	A significant improvement in students as well as in senior tutors.
(Fernández-Martín et al., 2022)	Spain	102	Impact of a peer-tutoring program on self-regulation in first- and final-year university students.	The program was effective.
(Garófalo & Miño, 2021)	Argentina	40	Impact of self-assessment and collaborative assessment activities to promote self-regulated learning in biology students.	Self-regulation and academic performance improved significantly.
(Hammill et al., 2023)	Australia	29	Effectiveness of brief mindfulness interventions for self-regulation of technology use and enhanced student engagement in a business course.	Improved self-regulation of technology use in class and greater engagement with the university environment.
(Hartley et al., 2020)	United States	289	Effectiveness of a brief intervention for SRL skills and smartphone use in first-semester university students.	Positive correlation between smartphone resource management and grades; none between limiting smartphone use and grades.
(Hawe et al., 2019)	New Zealand	53	To explore how using assessment exemplars can improve self-efficacy, self-control, and self-regulation skills.	Students more motivated, with better understanding of task requirements and self-regulation skills.

Table 3. *Cont.*

Author, Year	Country	Sample	Objectives	Results
(Hu et al., 2024)	Taiwan, China	93	Impact of integrating Learning Companion Systems and Mandala Chart Scaffolding on information literacy in students' perception of self-regulated learning.	Improved participants' information literacy self-efficacy and their perception of self-regulated learning.
(Huerta et al., 2021)	United States	29	Impact of a mindfulness program on developing intrapersonal and interpersonal competencies related to self-regulation in engineering students.	Improvement in students' intrapersonal and interpersonal competencies.
(Isham et al., 2024)	United Kingdom	44	Effectiveness of video feedback in developing metacognitive and emotional self-regulation skills in social work students.	Challenges in accessibility and clarity were noted.
(Keane et al., 2022)	Australia	10	To design and develop an evidence-based workshop program to help students manage stress, improve concentration, and succeed in their studies.	Only qualitative data indicated improvements in stress management and self-regulation.
(Lindín et al., 2022)	Spain	130	"Experiencing Edublocks" project aimed at helping university students select their learning paths.	Increased student satisfaction and improved self-regulation skills without significant workload for teachers.
(Lobos et al., 2021)	Chile	473	Effect of an intracurricular program using a mobile app on self-regulated learning strategies in university students.	Self-regulated learning strategies effectively promoted.
(Miller & Bernacki, 2019)	United States	32	Impact of self-regulated learning skill training on first-year university students struggling with mathematics.	Greater efficiency in learning mathematical topics.
(Mirza et al., 2021)	Pakistan	10	To evaluate a three-month course aimed at helping medical students with low determination.	Significant improvement in students with low levels of determination
(Perander et al., 2021)	Finland	190	To investigate how a workshop can improve self-regulated learning in first-year university students.	Students gained ideas that would benefit their study practices and motivation.
(Sauchelli et al., 2024)	Australia	99	To evaluate whether personalized email feedback improves self-regulation in first-year university students.	Increased motivation but did not improve the implementation.

Table 3. *Cont.*

Author, Year	Country	Sample	Objectives	Results
(Schippers et al., 2020)	The Netherlands	2934	Impact of a brief structured personal goal-setting intervention on academic performance in first-year university students.	Positive impact on participants' academic outcomes.
(Sirazieva et al., 2018)	Russia	104	To investigate the associations between processes involved in a personal goal-setting intervention and academic performance in first-year university students.	Significant increase in academic performance, especially for students who wrote specific plans to achieve their goals.
(Yang, 2024)	Taiwan, China	6	Impact of a socio-constructivist program on self-regulated learning in an English as a Foreign Language (EFL) course.	Significant improvement in self-regulated learning in cognition, metacognition, and intrinsic motivation.
(Yilmaz & Karaoglan Yilmaz, 2020)	Turkey	42	Effect of task and group awareness support from a pedagogical agent in a computer-supported collaborative learning environment on students' attitudes.	Students' attitudes toward online collaborative learning improved, but self-regulation skills did not.

Table 4 presents a detailed summary of the interventions analyzed in this systematic review. The table headings were selected to provide a clear and structured view of the key elements influencing the effectiveness of interventions aimed at improving self-regulated learning (SRL) in first-year university students. These headings allow for a systematic comparison of the studies and reflect the most relevant aspects of the teaching–learning process and tutorial actions.

(1) No.: This heading identifies the article for reference in the analysis of this systematic review.
(2) Author, year: This heading identifies the specific study to facilitate its localization and citation.
(3) Objectives: This heading specifies the purpose of each intervention, indicating which dimensions of self-regulation (cognitive, metacognitive, motivational, behavioral, and affective) are being developed.
(4) Agents: This heading identifies the individuals responsible for implementing the intervention (teachers, advisors, tutors), which is crucial for understanding the level of involvement and pedagogical approach.
(5) Procedures and Instruments: This heading describes the techniques and tools applied (tutoring, workshops, virtual applications), allowing for the comparison of methods used.
(6) Success (Yes/No): This heading indicates whether the intervention achieved its intended objectives, providing a quick assessment of its effectiveness.
(7) Effectiveness Indicator: This heading details the methods used to measure results (questionnaires, grades, focus groups), reflecting the rigor and validity of the evaluations conducted.

These headings were chosen to comprehensively capture the critical elements of the interventions, allowing for the identification of patterns of success, challenges, and areas

for improvement. Additionally, they help contextualize the findings based on the specific needs of students, available resources, and applied pedagogical strategies.

Table 4. Country, objectives, agents, Procedures and Instruments, success, and Effectiveness Indicator of the articles selected for this systematic review.

No.	Author, Year	Objectives	Agents	Procedures and Instruments	Success (Yes/No)	Effectiveness Indicator
1	(Alsuwaidi et al., 2023)	Metacognitive, motivational, behavioral, affective	University advisor, academic tutors	Individual reflection tasks, individual tutoring, workshops, virtual tools	Yes	Self-perception questionnaire, validated questionnaire, GRIT, attendance and follow-up
2	(Carpenter & Hodges, 2024)	Metacognitive, motivational, behavioral	Faculty	Explanation, teaching approach, Lectures/video tutorials, workshops, virtual tools	Partial	Self-perception questionnaire, grades, focus groups
3	(David et al., 2024)	Metacognitive, motivational, behavioral	University advisor	Group tutoring, workshops	Partial	Focus groups, semi-structured interviews
4	(Fernández-Martín et al., 2019)	Cognitive, metacognitive, motivational, behavioral	University advisor, academic tutors	Individual tutoring, workshops	Yes	Validated questionnaire, MSLQ, EHS, grades
5	(Fernández-Martín et al., 2022)	Cognitive, metacognitive	University advisor, academic tutors	Individual tutoring	Yes	Validated questionnaire, MSLQ, EHS, grades
6	(Garófalo & Miño, 2021)	Metacognitive	Faculty	Explanation, teaching approach, environment, individual reflection tasks, group tutoring	Yes	Grades, attendance and follow-up
7	(Hammill et al., 2023)	Metacognitive, behavioral, affective	Faculty	Explanation, individual reflection tasks, lectures/video tutorials, group tutoring	Yes	Self-perception questionnaire, focus groups, self-reflection
8	(Hartley et al., 2020)	Cognitive, behavioral	University advisor	Group tutoring	No	Validated questionnaire, MSLQ, grades
9	(Hawe et al., 2019)	Cognitive, motivational, affective	Faculty	Teaching approach, workshops	Yes	Self-perception questionnaire, semi-structured interviews

Table 4. *Cont.*

No.	Author, Year	Objectives	Agents	Procedures and Instruments	Success (Yes/No)	Effectiveness Indicator
10	(Hu et al., 2024)	Metacognitive, motivational	Faculty	Explanation, teaching approach, virtual tools	Yes	Validated questionnaire, ILSES, SRLPS, focus groups, semi-structured interviews
11	(Huerta et al., 2021)	Metacognitive, behavioral, affective	University Advisor	Individual reflection tasks, group tutoring, workshops, virtual tools	Yes	Self-perception questionnaire, semi-structured interviews
12	(Isham et al., 2024)	Metacognitive, affective	Faculty	Teaching approach, lectures/video tutorials, virtual tools	Partial	Self-perception questionnaire, focus groups
13	(Keane et al., 2022)	Cognitive, affective	University advisor	Workshops	Partial	Validated questionnaire, AAQ-II, GSE
14	(Lindín et al., 2022)	Metacognitive	Faculty, academic tutors	Teaching approach, environment, individual and group tutoring, workshops, virtual tools	Yes	Validated questionnaire (NE), grades, self-reflection
15	(Lobos et al., 2021)	Metacognitive, motivational, behavioral	Faculty	Explanation, virtual tools	Yes	Validated questionnaire, LB&S
16	(Miller & Bernacki, 2019)	Cognitive, behavioral	Faculty	Explanation, teaching approach, workshops, virtual tools	Yes	Self-perception questionnaire, grades, attendance and follow-up
17	(Mirza et al., 2021)	Metacognitive, motivational, behavioral, affective	University advisor	Workshops	Yes	Validated questionnaire, WSRT
18	(Perander et al., 2021)	Cognitive, metacognitive, motivational, behavioral, affective	University advisor	Workshops	N/A	Self-perception questionnaire
19	(Sauchelli et al., 2024)	Metacognitive, behavioral	Faculty	Virtual tools	Partial	Validated questionnaire, MSLQ
20	(Schippers et al., 2020)	Cognitive, behavioral	Faculty	Explanation, individual reflection tasks, virtual tools	Yes	Self-perception questionnaire, grades

Table 4. *Cont.*

No.	Author, Year	Objectives	Agents	Procedures and Instruments	Success (Yes/No)	Effectiveness Indicator
21	(Sirazieva et al., 2018)	Cognitive, metacognitive, motivational	Faculty	Explanation, workshops	Yes	Validated questionnaire, MSLQ
22	(Yang, 2024)	Cognitive	Faculty	Explanation, teaching approach, environment	Yes	Semi-structured interviews, self-reflection
23	(Yilmaz & Karaoglan Yilmaz, 2020)	Metacognitive	Faculty	Explanation, virtual tools	Partial	Validated questionnaire, HASRL

The table annotations in reading order are as follows: GRIT refers to grit, which denotes perseverance and passion for long-term goals. MSLQ stands for the Motivated Strategies for Learning Questionnaire, used to measure self-regulated learning and motivation. EHS is the Social Skills Scale for evaluating social skills. ILSES represents the Information Literacy Self-Efficacy Scale, while SRLPS is the Self-Regulated Learning Perception Scale. AAQ-II is the Acceptance and Action Questionnaire-II, and GSE refers to the General Self-Efficacy Scale. HASRL indicates the Self-Regulated Learning Scale. N/A means "Not Available". LB&S corresponds to the Lobos et al. (2021) scale on self-regulated learning. Finally, WSRT is the Wilcoxon Signed-Rank Test.

3.1. Intervention Objectives

In total, 74% of the articles focus on enhancing student self-regulation by developing or improving metacognitive skills, while 61% address behavioral skills, 48% focus on motivation, and 43% target cognitive skills. Only 35% address affective skills, with the majority of these (88%) published in the post-COVID-19 era (2020 onward). Notably, only article 18 takes a comprehensive approach by addressing all the dimensions of self-regulation, while the remaining 96% adopt a partial approach. Among these, 13% work on four of the five dimensions, 31% work on three dimensions, 35% focus on two dimensions, and 17% address just one dimension.

3.2. Agents, Procedures, and Intervention Instruments

Interventions to promote student self-regulation are conducted in an intracurricular manner by faculty members in 14 of the 23 analyzed articles (61%). In 13 of these cases, faculty members acted without additional support, while in article 14, they were supported by academic tutors. The remaining 39% (nine cases) involve extracurricular activities aimed at fostering self-regulation, carried out by university guidance staff. In three of these cases, senior students trained as tutors assisted in the intervention (articles 1, 4, and 5).

In 71% of the intracurricular cases (10 out of 14), faculty members explicitly develop self-regulation processes to help students progress. For example, in article 7 within the Marketing field, individual reflection exercises, video tutorials, and group tutoring sessions emphasize the importance of self-regulation, mindfulness practice, and managing technology use to avoid distractions. In article 15, a mobile app was created to provide metacognitive support for the course. In article 20 in business, self-regulation is explicitly taught through online individual reflection tasks for setting personal or academic goals. In article 21, self-regulation is addressed through workshops in International Relations, History, and Oriental Studies. Finally, in article 23 in Computer Science, awareness-raising

questions are integrated into the platform to guide group work planning, task execution, and evaluation.

However, in only 57% of the intracurricular cases (8 out of 14), faculty use a teaching–learning approach designed to implicitly promote self-regulation. In most of these (five out of eight), this is conducted by restructuring the course evaluation process. For instance, in study 6, self-assessment and collaborative evaluation strategies are introduced in a biology course to foster self-regulated learning (SRL). Students use a learning diary to reflect on their study strategies by answering three key questions:

(1) What facilitated their learning;
(2) What hindered it;
(3) What they can do to improve in the future.

These reflections are shared in group tutoring sessions with the instructor, promoting dialogue and peer support. This intervention helps students become more aware of their learning processes and plan improvements, resulting in greater autonomy and better academic outcomes.

In article 9, group tutoring clarifies evaluation criteria using examples to set clear expectations. In article 10, AI Learning Companions and Mandala Chart tools are used to enhance self-assessment. In article 12, video feedback is provided on the grading platform, accompanied by an access guide and online surveys. Lastly, in article 22, a socio-constructivist design is applied in an EFL course, using peer and teacher feedback/feedforward strategies.

In article 2, spaced practice is incorporated into Organic Chemistry as a structural teaching component, requiring a restructuring of activity planning and evaluation. This involved an explanatory lecture, an ad hoc workshop, and automated personalized feedback on the learning platform to facilitate metacognition.

Two proposals address diversity through pedagogy: Article 14 uses an individualized learning path design supported by group and individual tutoring sessions and workshops. Article 16 implements a virtual adaptive program for STEM students to reinforce problem-solving in mathematics. Both cases demonstrate flexible design authority shared between faculty and students.

Lastly, in three intracurricular cases, the learning environment also supports self-regulation by promoting active knowledge construction through student collaboration (article 22), collaborative evaluation strategies (article 6), or individualized learning paths (article 14).

The remaining cases (9 out of 23), where interventions are conducted extraneously to the curriculum, are carried out by university guidance agents. In three of these cases, senior students previously trained as tutors provided support. For example, in article 1, using the GRIT diagnosis (Duckworth et al., 2007), the intervention involved individual reflection tasks, one-on-one tutoring sessions with senior students, specialized workshops for developing key skills, and virtual tools. Similarly, in articles 4 and 5, fourth-year students provided 20 structured individual tutoring sessions to help first-year students improve their self-regulation.

Orientation tutors also implement interventions in the remaining cases. For instance, in article 3, first-year medical students participated in structured workshops where they discussed their learning strategies and study habits. These sessions focused on identifying ineffective habits and developing new, goal-oriented study practices. Students explored themes like balancing efficiency and effectiveness and managing motivation, which helped them align their study habits with long-term academic success goals.

In article 8, a group intervention was designed to address the challenges of smartphone usage during study time. The sessions included awareness training and strategies for reducing distractions caused by notifications and multitasking. Students were encouraged

to establish smartphone-free study periods and reflect on their usage patterns, resulting in modest improvements in self-regulated learning behaviors.

In article 11, first-year engineering students underwent a mindfulness training program designed to cultivate both intrapersonal and interpersonal competencies. This intervention consisted of four sessions where students practiced mindfulness techniques such as focused breathing and guided meditation. The program led to improvements in self-regulation, resilience, and stress management, as well as enhanced empathy and communication skills.

In article 18, a six-hour workshop was held to support first-year students' transition to higher education. Students reflected on their study habits through journal writing, which helped them identify challenges related to time management and motivation. The workshop emphasized practical self-regulation strategies, such as setting goals, managing stress, and developing effective study routines, which students reported as beneficial for their academic adjustment.

In article 13, an online toolkit program called "SETTLE DOWN" was developed to help students manage stress and self-regulate during their studies. The program included guided self-awareness exercises, stress management techniques, and reflective practices. Although quantitative results showed limited impact, qualitative feedback indicated improvements in students' ability to manage stress and stay focused on academic tasks.

Lastly, in article 17, a three-month course was offered to first-year medical students to enhance their determination and resilience. The intervention involved weekly sessions focusing on goal setting, perseverance, and strategies for overcoming academic challenges. Students engaged in reflective exercises and group discussions to reinforce their commitment to long-term academic objectives. The course significantly improved students' self-determination and ability to persist in the face of difficulties.

Guidance tutors also led interventions in the other cases. In article 3, medical students participated in discussions about their learning strategies and study habits through specific workshops. Article 8 was focused on the intervention involved in a group session aimed, among other things, at controlling mobile phone use. In article 11, engineering students received mindfulness training to improve self-regulated learning (SRL). In articles 18 and 13, workshops addressed self-regulation through stress management techniques. Finally, in article 17, medical students participated in a three-month course designed to improve their determination.

Among all the interventions studied, specialized training workshops were the most frequently used tool (in 12 out of 23 cases), followed by virtual tools (10 articles), group tutoring sessions (6 articles), individual reflection tasks (5 articles), one-on-one tutoring sessions (4 cases), and lectures or video tutorials (3 cases).

3.3. Success vs. Failure of the Intervention

In total, 65% of the 23 interventions analyzed were deemed effective, 87% of which had a significant sample size of more than 28 students. However, there is a notable difference between the intracurricular and extracurricular interventions. Specifically, 71% of faculty-led interventions conducted within courses were effective, compared to only 56% of extracurricular interventions.

Adding partially successful interventions increases these figures by an additional 29% for intracurricular cases and 22% for extracurricular cases. The 29% figure includes four cases: article 2, which ceased being effective when participation became mandatory; articles 19 and 23, which improved motivation for self-regulation and attitudes toward online collaborative learning, respectively, but did not enhance self-regulation strategies; and

article 12, where the video feedback intervention failed due to technical and pedagogical design flaws.

The 22% of partially successful extracurricular interventions include two cases: article 3, where students gained knowledge but did not apply self-regulation strategies, and article 13, where quantitative results showed no improvement, but open comments indicated better stress management and self-regulation.

Only 1 of the 23 interventions was classified as a failure: Article 8, an extracurricular intervention where grades did not correlate with reduced mobile phone use. In one case (article 18), the outcome was unspecified.

3.4. Effectiveness Indicators of the Intervention

As shown in Table 4, most of the analyzed studies (86.9%) use self-perception questionnaires as a measure of intervention effectiveness. Among these, 10 studies (43%) employ recognized tools, with the Motivated Strategies for Learning Questionnaire (MSLQ) being the most frequently used in articles 4, 5, 8, 19, and 21. In two cases, both by the same authors, the MSLQ is combined with another tool, such as the Social Skills Scale (EHS) (articles 4 and 5). Additionally, some studies use more than one questionnaire, even mixing validated and non-validated instruments.

According to self-perception questionnaires, grades are the second most common measure of intervention success, used in 34.8% of the cases. In 87.5% of these instances, grades are combined with self-perception questionnaires to assess intervention effectiveness. Moreover, in four cases, grade data are complemented by teacher assessments through student attendance and follow-up (articles 6 and 16), focus groups (article 2), or student self-reflection (article 14). In no cases are grades used exclusively as the sole measure of effectiveness.

Based on the examples discussed, the most effective techniques for improving self-regulated learning (SRL) in first-year university students can be categorized as follows.

3.5. Intracurricular Interventions

- Explicit Instruction of SRL Strategies: Integrating SRL directly into the course content through clear explanations, reflective practices, and guided exercises (articles 6 and 10).
- Collaborative Learning and Peer Feedback: Using group activities and peer review to promote reflection and goal setting (articles 11 and 18).
- Technology-Enhanced Tools: Implementing apps, virtual platforms, and AI-based tools to facilitate progress tracking and metacognitive awareness (articles 10 and 12).

3.6. Extracurricular Interventions

- Workshops and Group Discussions: Providing dedicated sessions to discuss learning strategies, study habits, and stress management (articles 3 and 17).
- Individual and Group Tutoring: Offering personalized support and mentoring to reinforce SRL strategies and build perseverance (articles 13 and 18).
- Mindfulness Training: Integrating mindfulness practices to improve focus, emotional regulation, and resilience (article 11).

These techniques highlight the importance of combining explicit instruction, collaborative learning, technological tools, and personalized support to maximize the effectiveness of SRL interventions. Tailoring these methods to the specific needs of students and the context of their academic discipline further enhances their impact.

4. Discussion

The results of this systematic review align with prior research demonstrating the importance of SRL in reducing dropout rates and improving academic performance (Panadero et al., 2017; Zimmerman, 2002). However, this study uniquely contributes by offering a comparative analysis of intracurricular and extracurricular interventions, showing that integrating SRL strategies directly into course content leads to higher success rates (Broadbent & Poon, 2015). Unlike previous studies that focus predominantly on cognitive and metacognitive dimensions (Devolder et al., 2012; Roth et al., 2016), our review underscores the need for a holistic approach that also includes motivational, behavioral, and affective dimensions.

Intracurricular interventions, implemented by faculty within courses, showed a higher success rate (71%) compared to extracurricular interventions (56%) conducted by tutors or academic advisors. This difference highlights the benefits of integrating SRL strategies directly into the teaching–learning process, ensuring a more consistent application of self-regulation techniques. In contrast, extracurricular approaches often face challenges related to student motivation and engagement.

Key strategies such as specialized workshops, virtual tools, and personalized tutoring have consistently shown effectiveness across various contexts and disciplines.

Educators can enhance SRL by explicitly teaching self-regulation strategies within their courses, such as goal setting, progress monitoring, and reflective practices. Incorporating collaborative activities and peer feedback can further reinforce these skills. Tutors and academic advisors can support these efforts through targeted workshops and individualized mentoring. Additionally, integrating virtual tools and apps for tracking progress can provide students with continuous feedback, promoting sustained engagement and self-awareness. A combined approach of instruction, reflection, and personalized support can help address the diverse needs of students and reduce the risk of early dropout.

Cross-referencing the data from Tables 3 and 4 reveals that smaller sample sizes (fewer than 30 participants) tend to yield consistent outcomes in intervention effectiveness but are often limited in terms of generalizability. Notable examples include Isham et al. (2024), with 44 participants, and Alsuwaidi et al. (2023), with 28, both demonstrating positive results but facing scalability challenges. Conversely, studies with larger samples, such as Schippers et al. (2020), involving 2934 students, stand out for offering more robust and generalizable results, particularly in intracurricular interventions with explicit self-regulation components.

In terms of effectiveness by sample size, the results confirm that intracurricular interventions hold a significant advantage. The analysis reveals that success correlates not only with the integration of self-regulation strategies into the curriculum but also with the sample size. Studies like Lobos et al. (2021), which included 473 participants, underscore the importance of combining technological tools with structured pedagogical practices to maximize impact. In contrast, extracurricular interventions, such as the one reported by David et al. (2024), with 29 participants, face challenges related to student motivation and follow-through.

The geographical context also influences the effectiveness of interventions. Most studies come from Anglo-Saxon countries (39%), followed by studies from Latin America (21%), Asia (17%), and Europe (20%).

- In Anglo-Saxon countries, interventions tend to integrate technological tools and structured tutoring approaches (articles 8 and 13).
- In Latin America, strategies often focus on collaborative dynamics and the development of social skills (articles 11 and 6).

- In Asia, approaches that combine technology and metacognitive strategies, such as Learning Companions, stand out (article 10).

These differences suggest that cultural and educational contexts influence the choice and effectiveness of interventions. The effectiveness of strategies also varies according to the field of study.

- In Science and Technology, interventions based on virtual tools and structured practices have proven to be more effective (articles 10 and 11).
- In social sciences and humanities, strategies focused on individual reflection, learning diaries, and collaborative work have shown better results (articles 3 and 17).
- In Medicine, interventions combining reflective tutoring and stress management have been particularly effective in improving perseverance and motivation (articles 13 and 18).

These findings highlight the importance of adapting interventions to the specific characteristics of each discipline to maximize their effectiveness. Given the variability in the effectiveness of SRL strategies across disciplines, it is essential to tailor interventions to the specific characteristics of each field. In Science and Technology, incorporating virtual tools and structured problem-solving exercises can be effective (Broadbent & Poon, 2015; Lobos et al., 2021). In social sciences and humanities, reflective journals and collaborative discussions can promote deeper learning, suggesting a discipline-specific tailoring of SRL approaches (Hawe et al., 2019; Lindín et al., 2022). For Medicine and Health Sciences, combining stress management workshops with reflective tutoring can enhance resilience and perseverance. Recognizing these differences allows educators to design more context-specific SRL interventions, maximizing their impact on student success.

This study also contributes a novel perspective on the affective dimension of SRL, which has often been overlooked in previous reviews. Managing emotions such as stress and anxiety, particularly in post-pandemic contexts, is crucial for supporting students' psychological well-being alongside cognitive and behavioral strategies (Gestsdottir et al., 2021; Holzer et al., 2021). This dimension is particularly relevant for fostering resilience and persistence among first-year university students, as these emotional factors significantly influence academic success and retention (Fruehwirth et al., 2021; Pekrun et al., 2002). Addressing this gap in future research and practice could lead to more comprehensive SRL frameworks that integrate both academic and emotional development.

Challenges and Limitations

Some interventions have shown only partial success, highlighting the need for continuous adjustments and improvements. For example, in article 2, the intervention was effective only when participation was voluntary. In articles 19 and 23, although motivation and attitudes toward self-regulation improved, the effective implementation of self-regulation strategies did not follow. Additionally, the success of the intervention (article 1) in the first year faded by the second year, underscoring the need for intervention continuity throughout the university program.

Another significant limitation lies in the measurement instruments used to assess intervention effectiveness. The predominance of self-perception questionnaires can introduce subjective biases. It would be advisable to complement these instruments with objective measures and mixed methods, including direct observation or academic performance analysis. While self-perception questionnaires are widely used, they can introduce subjective biases. To enhance the robustness of SRL assessment, future research could incorporate objective measures such as task performance data, learning analytics (e.g., time spent on tasks, completion rates), and observational methods. Combining these with qualitative

methods like interviews or focus groups can provide a more comprehensive evaluation of intervention effectiveness.

Moreover, implementing these strategies requires a considerable investment of time and resources from faculty, advisors, and students. The lack of specific training, excessive teaching workload, and limited technological or administrative resources can constrain the effectiveness and sustainability of interventions. Implementing SRL interventions often requires significant time and resources, which can pose challenges for faculty and tutors. The lack of specific training and the high teaching workload may hinder the consistent application of these strategies. To address these challenges, institutions could offer professional development programs on SRL techniques, provide technological support for virtual tools, and allocate dedicated time for tutoring and mentoring. Collaborative efforts between departments and centralized support from academic services can further facilitate the integration of SRL strategies into curricula.

Finally, the question arises as to whether there is a relationship between the field of study and the strategy used. Some disciplines, such as experimental sciences or engineering, may benefit more from practical and technology-based approaches, while in fields like humanities or social sciences, reflective and collaborative strategies may be more effective. Investigating this relationship could provide valuable insights for designing interventions better suited to each academic context.

5. Conclusions

This systematic review examined various interventions aimed at enhancing self-regulated learning (SRL) in first-year university students, identifying key strategies and their effectiveness across different contexts.

We can affirm that this study's first objective (O1: identify interventions aimed at improving SRL in first-year undergraduate students through tutoring/guidance and/or academic support) has been achieved. Although the PICO structure and the search syntax identified many studies within the six-year review period, the tutoring/guidance approach was undoubtedly the most limiting factor. Therefore, we believe it is important to promote this type of academic support as a quality action line that addresses student diversity and effectively handles highly heterogeneous entry profiles.

Focusing on the second objective (O2: identify successful interventions, their agents, procedures, and instruments), most identified interventions were conducted in Anglo-Saxon contexts, with some representation from Latin American and Asian countries. These interventions focused on developing cognitive, metacognitive, motivational, and behavioral skills, while those addressing the affective dimension were less common, despite its recognized importance in both the pre- and post-pandemic literature (De la Fuente et al., 2015; Gaeta et al., 2021; García Montero & Bustos Córdova, 2021; Holzer et al., 2021; Malmivuori, 2006). This heterogeneity in interventions and approaches suggests that no single methodology is universally effective; multiple strategies can succeed depending on the context and the student's specific needs.

Intracurricular interventions conducted by faculty within their courses demonstrated higher success rates compared to extracurricular interventions led by university guidance agents. This finding underscores the importance of integrating SRL strategies directly into the teaching–learning process, enabling a more coherent and sustained application of self-regulation techniques. As highlighted by (Mayo, 2019), "good teaching" should promote self-regulation throughout the entire teaching process—from planning, classroom implementation, and learning management to self-evaluation aimed at improvement.

The most effective interventions are those that combine a significant sample size with explicit intracurricular strategies, such as structured workshops, integrated technological

tools, and personalized tutoring within the academic framework. These approaches not only ensure higher student engagement but also deliver sustained and measurable impact on the development of self-regulation skills. This suggests that, to optimize outcomes, institutions should prioritize the integration of interventions into curricular design, supported by robust evaluation methods that combine qualitative and quantitative tools.

Self-perception questionnaires were the most used indicators of effectiveness, followed by academic grades and focus groups. This preference for subjective self-assessment measures provides a broader view of students' perceptions of their SRL processes. In this context, the use of validated evaluation tools, such as the MSLQ (Pintrich et al., 1993) and others, is particularly relevant. Combining these validated instruments with grades and qualitative evaluations would undoubtedly provide a more comprehensive understanding of the impact of the implemented strategies. Furthermore, the diversity of intervention types and their success suggests the importance of adapting these strategies to group and individual contexts, while emphasizing continuous training as a factor for medium- and long-term success.

The conclusions suggest that interventions with a holistic approach, encompassing all the dimensions of self-regulation and integrating them into the teaching–learning process, are more effective. For practitioners, this entails designing interventions that not only to address cognitive and metacognitive dimensions but also incorporate emotional and motivational support systems. For instance, combining traditional academic tutoring with workshops on stress management or resilience training could yield more effective outcomes. This does not preclude complementing these efforts with an extracurricular approach, which would require specific training programs for intervention agents.

Moreover, this study highlights the potential for leveraging technology not merely as a supplementary tool but as a central component of SRL strategies. Adaptive platforms and AI-driven tools, for instance, could facilitate personalized feedback loops, enhancing both engagement and self-awareness among students. Policymakers and administrators should prioritize the development of infrastructures that support such innovations while ensuring equitable access across diverse student populations. These directions could establish a more sustainable and impactful framework for SRL interventions, fostering academic success and well-being for future generations.

This study's limitations stem from the selection of databases and the defined time frame. Expanding the references to include the gray literature (e.g., conference papers and non-indexed journals) and extending the time frame could broaden this study's identification and scope. However, this might reduce its novelty and impact by focusing on previously published studies.

Future research should explore how SRL interventions are underrepresented in cultural contexts and disciplines where SRL practices are less established. Additionally, interdisciplinary studies that combine insights from education, psychology, and technology could offer innovative strategies for fostering SRL. Investigating the long-term impact of SRL interventions on academic resilience and emotional well-being can also provide valuable insights for improving student retention. We suggest analyzing long-term impact by considering factors such as academic resilience and students' emotional well-being. Additionally, expanding research to cultural and educational contexts where tutoring is less established could provide a more global and applicable understanding of SRL interventions. Incorporating a gender perspective into research is also recommended.

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