Effectiveness of Self-Regulated Learning Intervention on Foreign Language Learning at Tertiary Level: A Systematic Review

Li Su[1,2], Nooreen Noordin[1] & Joanna Joseph Jeyaraj[1]

[1] Department of Language and Humanities Education, Faculty of Educational Studies, Universiti Putra Malaysia (UPM) Serdang, Selangor, Malaysia.

[2] School of Culture, Tourism and International Education, Henan Polytechnic Institute, Nanyang, China

Correspondence: Nooreen Noordin, Department of Language and Humanities Education, Faculty of Educational Studies, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.

Abstract

Self-regulated learning (SRL) has been widely recognized as an efficient way of enhancing foreign language learning (FLL) outcomes in the sphere of higher education. The current study aimed to evaluate the effectiveness of SRL interventions or supports in improving foreign language learning among learners in tertiary institutions. The review involved 20 studies pertaining to exploring the effects of SRL interventions on improving FLL. According to this systematic review, SRL interventions can be successful in improving various aspects of FLL, including language proficiency, language learning strategies (LLS), motivation, and self-efficacy. The review also provides practical implications for language practitioners and researchers, including the need to tailor SRL interventions to the specific specialized demands of EFL learners and the importance of considering contextual factors to devise and administer SRL interventions in the sphere of FLL at tertiary education. However, several limitations of the existing studies are also identified, including limited assessment of long-term effects, limited use of control groups, insufficient consideration of individual differences, and lack of use of the mixed-methods approach. The findings also provide implications for future studies to address these limitations and provide a more nuanced understanding of the effectiveness of SRL interventions on foreign language learners. Specifically, future studies should incorporate longer-term assessments, stronger control groups, assessments of individual differences, and the mixed-methods approach. Overall, the paper provides insights into the strengths and limitations of existing research and highlights areas for future inquiry concerning SRL and foreign language acquisition.

Keywords: self-regulated learning (SRL), foreign language learning (FLL), language proficiency, language learning motivation, systematic literature review

1. Introduction

Learning a foreign language is becoming increasingly essential in today's globalized world. Generally, learners are required to achieve a high level of proficiency in a foreign language to meet academic and professional requirements. Meanwhile, FLL is a challenging and complex process that requires language learners to engage in a range of cognitive, affective, and social activities (Fandiño et al., 2019). However, traditional classroom teaching methods may not be sufficient to help students achieve this level of proficiency. Over the past few decades, researchers have explored various approaches to enhance FLL outcomes, including technology-enhanced language learning (Shadiev & Yang, 2020), task-based learning (Hasnain & Halder, 2021), and learner-centered approaches (Butler et al., 2021). Among these approaches, self-regulated learning (SRL) has gained increasing attention as an efficient way to improve FLL outcomes. By engaging in SRL, learners can take ownership of their learning, develop an in-depth perception of the language, and develop more effective learning strategies.

SRL is widely regarded as a crucial aspect of FLL, as it allows learners to be responsible for their learning process and achieve better outcomes. Self-regulated learners are proactive in their ability to set goals, monitor their progression, and adjust their learning strategies accordingly to achieve their goals (Bransen et al., 2020; Huang et al., 2021; Zimmerman, 2002). In the field of FLL, SRL is particularly important as it enables learners to direct their learning process and overcome the challenges associated with acquiring a novel language. In accordance with the previous studies, interventions could have a positive influence on SRL (e.g., Ceron et al., 2021; Lee et al., 2019). Since SRL interventions have been proposed to enhance foreign language acquisition by providing learners with the skills and strategies needed to conduct their learning effectively (Saadati et al., 2021; Teng & Zhang, 2020; Wong et al., 2019). SRL interventions can not only be designed to target specific ingredients of the SRL process, such as setting goals, self-monitoring, and self-evaluation, as well as more general study strategies, such as time management and motivation (Cleary & Callan, 2018) but also supporting the whole process of SRL (Jansen et al., 2020; Zheng, 2016).

Despite the potential benefits of SRL interventions in FLL, however, the effectiveness of these interventions has not been systematically

evaluated in higher education. Taking full account of the above issue, this systematic review attempts to synthesize the present literature on the effectiveness of SRL interventions on FLL outcomes. A systematic review of the current studies is needed to provide a comprehensive assessment of the effectiveness of SRL interventions in FLL. In order to fill this gap, the objective of this systematic review is to synthesize the existing literature on SRL in FLL and identify the factors that impact SRL intervention to generate implications for future research.

1.1 Background of the Study

1.1.1 Self-regulated Learning at the Higher Education Level

Many students find the transition from secondary education to higher education to be an arduous process. Since college often provides students with more freedom and flexibility, which require them to be more self-directed and initiative in their learning process. In addition, college coursework is generally more rigorous and demanding than high school coursework, and students may be required to complete more reading, writing, and critical thinking assignments than they are used to. This kind of novel scenario renders academic self-regulation becomes one of the most important traits college learners should possess for lifelong learning. Originating from educational psychology, SRL concerns the ability of students who take control of their own learning process. This approach involves students actively setting goals, planning their approach to learning, monitoring their progress, and adjusting as needed to achieve those pre-set goals.

In higher education, SRL could take many forms. For example, students may engage in self-reflection to identify their assets and drawbacks, set appropriate goals for themselves, and develop strategies to achieve those goals (Egitim, 2021). They may also monitor their progress towards their goals, using tools like self-assessment or feedback from instructors, and make adjustments as necessary to ensure they stay on track. SRL in higher education can also involve students' engagement in applying metacognitive strategies, for instance self-explanation, self-questioning, and self-monitoring to boost their understanding and retention of the material they are learning. Additionally, the SRL process may involve students seeking out resources, like tutoring or study groups, to supplement their learning (Zheng & Yining, 2020).

Research studies have repeatedly revealed that highly self-regulated students more plausibly achieve academic success than those who are less self-regulated (Bai & Guo, 2021). They tend to be more engaged in the learning process, more motivated, and better able to manage their time and resources. In addition, SRL has been relevant to other positive outcomes, for example, higher levels of critical thinking and problem-solving competence.

However, despite the importance of SRL in higher education, many students struggle to develop effective academic self-regulation skills (Anthonysamy et al., 2020; Karlen et al., 2021). Therefore, it is critical for instructors and educational institutions to provide sufficient support and training programs to direct students to cultivate and improve their SRL skills. This could include teaching students about the different cognitive and metacognitive strategies that they can use to become more self-regulated, as well as providing feedback and guidance on how to implement these strategies efficiently.

Overall, SRL in higher education is a proactive approach to learning that empowers students to take ownership of their academic success. By developing skills like goal setting, time management, and self-reflection, students can become more effective learners and achieve greater success in their academic pursuits.

1.1.2 Self-regulated Learning and Foreign Language Learning

SRL could provide a positive effect on FLL in a bulk of ways. Firstly, SRL is assumed to improve language learning motivation: SRL can help language learners feel more motivated by giving them a sense of control over their own learning process (Viberg et al., 2020). When learners are competent to set goals, monitor their progression, and make adjustments as needed, they are more likely to feel invested in their own learning and more motivated to persevere with making progress in the language learning process. Secondly, SRL has been recognized as an effective strategy for enhancing learners' engagement in their own learning process, leading to improved learning outcomes. Specifically, active learner involvement in the learning process is thought to increase engagement and motivation, as learners are encouraged to actively participate and take responsibility for their own learning process, set goals, and monitor their progress. In the context of FLL, this is particularly crucial, as learners must practice actively communicating through speaking, listening, writing, and reading in the target language. Thirdly, enhanced comprehension might be attained with SRL. SRL can help learners improve their comprehension of the language by using metacognitive strategies like self-questioning and self-explanation (Teng, 2020). By monitoring their own understanding of the language and adjusting their approach as needed, learners can better understand the language and improve their comprehension. Finally, SRL can also help learners become more autonomous learners, which is particularly important for language learners who may need to continue developing their language skills outside of the classroom (Onah et al., 2021). By taking responsibility for their own language learning process, learners can become more self-sufficient and better able to continue making progress in their language learning even after their formal language classes have ended.

Overall, SRL can have a significant impact on FLL by helping learners become more motivated, engaged, and independent learners who are better able to understand and use the target language.

1.2 Previous Studies and Research Gap

Considerable amounts of previous studies have investigated the interrelationship between SRL and foreign language learning. Specifically,

Mohammadi et al. (2020) found that students who were taught SRL strategies showed greater improvement in reading comprehension compared with the control group. Xu and Luo (2022) found that SRL training improved listening comprehension in university students. Theobald (2021) conducted a meta-analysis of studies on SRL and academic achievement and found that SRL interventions had a positive effect on academic achievement, with the effect size being the largest for younger learners. The results suggested that SRL interventions can be a positive indicator for promoting academic achievement in general, but it is unclear how well these findings generalize to FLL.

Other studies have examined the correlation between SRL and motivation in FLL. For example, Wang and Zhan (2020) found that learners who exhibited greater self-regulation were more motivated and had greater achievement in second language learning. Similarly, Bai and Wang (2020) found that SRL interventions had a positive effect on motivation in FLL in the context of EFL learners in Hong Kong.

Several previous studies have also examined the effectiveness of SRL interventions in improving FLL performance. For example, Panadero et al. (2017) conducted a meta-analysis of 19 studies and the results indicated that SRL interventions were powerful in bolstering FLL performance, including language proficiency, motivation, and self-efficacy. However, previous studies have also identified several factors that influence the effectiveness of SRL interventions in improving foreign language learning outcomes. For example, Schunk and Zimmerman (2011) found that the effectiveness of SRL interventions was influenced by learners' characteristics, such as their level of language proficiency, motivation, and self-efficacy. Ridgley et al. (2020) stated that the type and duration of the SRL intervention, as well as the context in which the intervention was implemented, influenced its effectiveness.

While previous research provided some evidence of the potential strength of SRL interventions in FLL, a systematic evaluation of the effectiveness of these interventions is still under-researched and needs to explore further.

2. Method

2.1 Procedure

The present study utilized the methodology suggested by Petticrew and Roberts (2008), a widely adopted approach in social science research for conducting systematic reviews. Systematic reviews are recognized as scientific approaches that attempt to diminish systematic error (bias) by comprehensively identifying, appraising, and synthesizing all involved research to address a specific research problem or a battery of problems. The study adhered to Petticrew and Roberts' (2008) framework by utilizing the seven stages, which involved "defining the research questions or hypotheses, identifying the types of studies, performing a comprehensive literature search, screening the search results, appraising the included studies, synthesizing the findings, and assessing the heterogeneity among the studies" (Petticrew & Roberts, 2008, p. 9). Moreover, the systematic review included an evaluation of the references and citations (Greenhalgh & Peacock, 2005).

As depicted above, the first stage is to generate research questions based on the systematic literature review on SRL and foreign language learning:

1. What are the specific components of SRL that have been targeted in interventions aimed at enhancing foreign language learning?

2. What outcomes have been assessed in studies examining the effectiveness of SRL interventions on foreign language learning?

3. What are the most effective types of SRL interventions?

4. What are the gaps in the current research on SRL interventions in foreign language learning?

2.2 Study Selection Criteria

The study selection criteria were established to determine the included studies. The scope of the related research was restricted to articles written in English and only peer-reviewed journals were included. Other kinds of publications were excluded, such as book reviews and conference papers. This selection criterion was commonly employed by amounts of scholars in systematic reviews to assure high quality, practicality, and accessibility (Gopalakrishnan & Ganeshkumar, 2013; Johnson & Hennessy, 2019; Ouyang et al., 2022). Meanwhile, the included articles were restricted to the period from 2010 to 2022. The following inclusive and exclusive criteria were applied to screening and selecting the eligible articles. Table 1 was utilized to illustrate the inclusion and exclusion criteria of the current research.

Table 1. Literature review selection criteria

Inclusion criteria	Exclusion criteria
Published in English and from 2010 to 2022	Published in other languages and outside of 2010 to 2022.
Published in peer-reviewed journals	Book reviews, conference papers, thesis or dissertation
Empirical studies exploring SRL in foreign language learning setting	Studies investigating SRL in other disciplines
Empirical studies exploring SRL process or the components of SRL	Studies investigating SRL in other disciplines and contexts
Empirical studies in the context of tertiary education	Inadequate information on research design and data analysis
SRL intervention or training program	Studies investigating SRL outside of tertiary education

2.3 Search Process

After defining the inclusive and exclusive criteria of the included studies, the target databases and search terms were determined to conduct the search process. In the current study, several academic journal databases were utilized: Educational Resources Information Centre (ERIC), Scopus, and Google Scholar. With the intention of attaining thoroughly comprehensive results, the key concepts related to the RQs were clearly identified: self-regulated learning, intervention, foreign language, higher education. Based on the above concepts, the search terms used in the previous studies, including their synonyms and alternative spellings, were identified. The search string was employed to elicit the related studies: ("support" OR "scaffold" OR "facilitat" OR "train" OR "intervention") AND ("self-regulated" OR "self-regulatory" OR "self-regulation" OR "self-regulat" OR "SRL") AND ("language learning" OR "foreign language learning" OR "EFL" OR "ESL" OR "second language learning") AND ("higher education" OR "college" OR "university" OR "tertiary education").

2.4 Screening Process

A systematic review methodology was employed in the present study, adhering to the seven stages stated by Petticrew and Roberts (2008) for limiting systematic error and addressing a particular research question. The screening process, which involved stages 4 to 7, was conducted by a team of three researchers. Relevant databases were searched in December 2022, resulting in 109 articles that were subsequently appraised and synthesized based on predefined inclusion and exclusion criteria. This process resulted in 22 articles in total being identified for analysis. Additionally, the snowball method was applied to the reference lists of these 22 articles to identify further relevant studies. Ultimately, 20 articles were retained for inclusion in the systematic review. The conjunct searching and screening procedure are depicted in Figure 1.

3. Results

Through the analysis of the contents of the 20 articles, the research results are illustrated to address the research problems.

RQ1: What are the specific components of SRL that have been targeted in interventions aimed at enhancing foreign language learning?

The specific components of SRL that have been targeted in interventions aimed at enhancing FLL in the 20 studies can be broadly categorized into three areas: cognitive strategies, metacognitive strategies, and affective strategies.
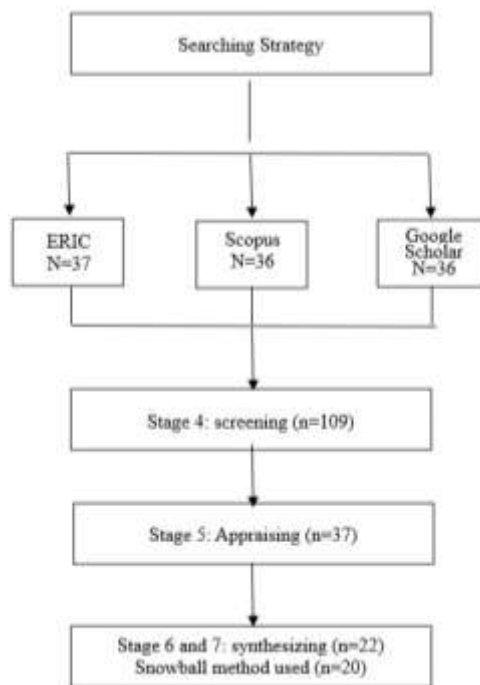

Figure 1. Searching and Screening Processes

Cognitive strategies: Several studies focused on cognitive strategies, such as note-taking, summarizing, repetition, elaboration, and inferencing, as a means of enhancing FLL. For instance, implementing a self-directed learning program including cognitive strategies, such as summarizing and repetition, was demonstrated that it improved English proficiency among Chinese university students.

Metacognitive strategies: Many studies targeted metacognitive skills, including goal setting, planning, monitoring, and evaluating, as a means of enhancing FLL. For instance, by conducting a metacognitive intervention program that included goal setting, planning, and monitoring, and found that it could improve listening comprehension among Saudi Arabian EFL university students. Similarly, this review also found that implementing a metacognitive strategy training program that focused on planning and evaluating could enhance Chinese EFL learners' metacognitive awareness and English oral performance.

Affective strategies: Some studies targeted affective strategies, such as self-motivation, self-efficacy, and self-confidence, as a means of enhancing FLL. For example, by employing a self-regulated learning training program that included affective strategies, such as self-motivation and self-efficacy, and found that it improved the English proficiency and motivation of targeted Chinese EFL college students.

In summary, the specific components of SRL that have been targeted in interventions aimed at enhancing FLL in the 20 studies include cognitive, metacognitive and affective strategies. These strategies were implemented in various ways and with different emphases across the studies, suggesting that there is no single or standardized approach to enhancing FLL through SRL interventions.

RQ2: What outcomes have been assessed in studies examining the effectiveness of SRL interventions on foreign language learning?

The analysis of the 20 studies in this systematic review approach revealed the effects of SRL interventions on multiple perspectives of language learning, including language proficiency, reading and listening comprehension, writing and oral performance, vocabulary acquisition, and motivation. The studies demonstrated that SRL programs that incorporate both cognitive and affective strategies can be effective in enhancing English proficiency in Chinese university students. Additionally, a metacognitive intervention program involving goal setting, planning, and monitoring was shown to improve listening comprehension in Saudi Arabian EFL university students. These findings suggest that SRL interventions can have played an active role in various language learning outcomes and can be an effective approach for improving language learning among different student populations.

Likewise, several studies have shown that SRL interventions can improve various aspects of language learning. For example, an SRL intervention that incorporated both cognitive and metacognitive strategies was found to be efficient in improving the reading comprehension of Chinese college students. Meanwhile, a training program that involved cognitive, metacognitive, and affective strategies was shown to improve English reading comprehension and academic self-regulation among Chinese university students. Regarding listening comprehension, a metacognitive strategy training program that involved planning and evaluating was found to be effective in enhancing the listening comprehension of Japanese EFL learners. Additionally, a similar program that consisted of goal setting, planning, and monitoring was shown to improve listening comprehension and self-efficacy among Chinese EFL learners. These findings provide further support for the effectiveness of SRL interventions in enhancing various FLL outcomes among diverse student populations.

Regarding writing performance, an SRL intervention comprising cognitive and metacognitive strategies has been found to generate academic success in the writing performance of Chinese university students in Taiwan. As for oral skills, metacognitive strategy training programs involving planning and evaluating have been shown to enhance Chinese EFL learners' metacognitive awareness and oral performance, while a self-directed learning program that incorporates cognitive, metacognitive, and affective strategies has been found to improve the oral performance of Chinese EFL learners in Taiwan.

In terms of vocabulary acquisition, a cognitive strategy training program comprising elaboration and inferencing has been found to improve vocabulary acquisition among Chinese EFL learners. Finally, research has shown that SRL interventions that include affective strategies such as self-motivation and self-efficacy can improve the motivation of Chinese EFL college students and positively impact foreign language achievement.

Overall, the findings suggest that self-regulated learning interventions can significantly enhance various aspects of language learning. Cognitive and metacognitive strategies can improve reading comprehension, writing performance, and vocabulary acquisition, while metacognitive strategies such as planning, evaluating, and goal setting can enhance listening comprehension and oral performance. Incorporating affective strategies, such as self-motivation and self-efficacy, can also positively impact motivation and language achievement.

RQ3: What are the most effective types of SRL interventions?

The most effective types of SRL interventions for enhancing FLL in the 20 studies were metacognitive strategy training, self-directed learning programs, cognitive strategy training, and general self-regulated learning training. These interventions targeted a variety of SRL components and were effective in enhancing various language-related skills and abilities, including listening comprehension, oral performance, writing performance, vocabulary acquisition, and reading comprehension. Metacognitive strategy training that included goal setting, planning, and monitoring improved listening comprehension among Saudi Arabian EFL university students. Similarly, the metacognitive strategy training programs that included planning and evaluating enhanced Chinese EFL learners' metacognitive awareness and oral performance.

Overall, the most efficient types of SRL interventions in FLL are those that are tailored to the specific language learning outcome being targeted and the traits of the student population. Effective SRL training should incorporate a combination of cognitive, metacognitive, and affective strategies, and should be implemented in a structured and consistent manner over an extended period of time.

RQ4: What are the gaps in the current research on SRL interventions in foreign language learning?

Despite the promising findings of the 20 studies on the efficiency of SRL scaffolding in FLL, various gaps in the current research should be addressed in future studies.

First of all, the selection of samples needs to avoid limited diversity. Many of the studies had limited sample sizes and focused on a

particular group of learners, such as university students in specific regions. As such, the results may not be generalized to other contexts and populations, and future studies need to include more diverse samples that represent a variety of learners and contexts.

Subsequently, it is imperative to recognize the potential impact of contextual factors on the efficacy of SRL interventions. Regrettably, several of the reviewed studies have not provided a comprehensive assessment of contextual factors that may have influenced the effectiveness of the interventions. Specifically, some studies did not provide detailed information about the instructors who delivered the interventions or the specific institutional contexts in which the interventions were implemented. The absence of such contextual information may hinder the generalizability of the study outcomes to diverse educational settings and student populations. As such, future research endeavors should make a concerted effort to account for contextual factors that may affect the success of SRL interventions. This could entail exploring how factors such as student characteristics, instructor qualities, institutional norms, and cultural differences impact the efficacy of SRL interventions. Such an approach will provide more nuanced and comprehensive findings, thereby improving our understanding of the role of SRL interventions in promoting effective language learning.

Another noteworthy issue pertains to the limited assessment of the long-term effects of the SRL interventions. It was observed that the majority of the studies included in the review focused only on the immediate effects of the interventions, with only a small number of studies following up with participants to evaluate the long-term effects of the interventions. Such an approach is a potential limitation to the research, as it fails to address the durability of the interventions' benefits over an extended period. Therefore, to provide a more complete understanding of the impact of SRL interventions on language learning, it is highly recommended that future studies should integrate longer-term assessments of their effects. By doing so, researchers will be able to determine if the positive outcomes of the interventions are maintained over time, which is an important aspect to consider when evaluating the feasibility of implementing these interventions on a larger scale. Moreover, such assessments will provide valuable insights into the long-term benefits and challenges associated with the implementation of SRL interventions, which may help to refine future research directions and ultimately improve the effectiveness of SRL interventions in promoting language learning.

An additional concern pertains to the limited use of control groups in some studies or the use of weak control groups that may not have been sufficient to effectively control for extraneous variables. The failure to adequately control for such variables may have potentially confounded the results of the studies. Consequently, future studies must incorporate stronger control groups or experimental designs that can more effectively enable valid comparisons between groups.

Furthermore, some studies did not account for individual differences in learners' SRL skills, motivation, or language proficiency, despite the potential impact that these factors may have on the effectiveness of SRL interventions. Future studies should incorporate assessments of these factors as part of their study design to explore how individual differences may influence the effectiveness of SRL interventions.

Moreover, it was found that most studies relied heavily on quantitative approaches to assess the effectiveness of the SRL interventions, with few using the mixed-methods approach to provide a more comprehensive understanding of the interventions' impact on language learners. Adopting a mixed-methods approach in future studies would facilitate a more nuanced and comprehensive understanding of the interactions between SRL interventions, contextual factors, and individual differences, and enable researchers to provide more nuanced insights into the mechanisms underlying the interventions' effectiveness.

4. Implications

This systematic review has several implications for language educators and researchers, as well as for students and policymakers.

For language educators, the findings suggest that SRL interventions can be an effective approach to enhancing foreign language learning at the higher education level. Educators may consider integrating SRL components, such as goal setting, planning, and self-monitoring, into their language curriculum and providing support and guidance for learners in their SRL practices. Educators may also consider incorporating technology or multimedia resources, as well as collaborative or social learning activities, to enhance learner engagement and motivation.

For language researchers, the findings suggest that future studies on SRL interventions in foreign language learning need to consider the specific components and contexts of SRL interventions, as well as the outcomes and measures used to assess their effectiveness. Future studies may also consider the influence of contextual factors, such as learner characteristics, institutional policies, and cultural norms, on the effectiveness of SRL interventions.

For students, the findings suggest that developing SRL skills, such as goal setting, planning, and self-monitoring, can enhance their foreign language learning outcomes and promote their autonomy and self-efficacy. Students may consider seeking guidance and support from their language instructors or peers in their SRL practices, as well as utilizing technology or multimedia resources to enhance their learning experience.

For policymakers, the findings suggest that promoting SRL practices in foreign language education can contribute to enhancing the quality and effectiveness of language education at the higher education level. Policymakers may consider providing resources and support for language educators to integrate SRL components into their curriculum and to enhance the use of technology or multimedia resources in language learning. Policymakers may also consider promoting research on the effectiveness of SRL interventions in foreign language learning and encouraging collaboration and exchange among language educators and researchers in this field.

5. Conclusion

This systematic review provides evidence of the effectiveness of SRL interventions in improving foreign language learning outcomes at the higher education level. The studies included in the review used a variety of SRL interventions and measured a range of language learning outcomes, suggesting that SRL interventions can be implemented in different ways to achieve positive results. The review also identified some limitations, such as the small number of studies and the lack of standardization in the SRL interventions used, which should be addressed in future research.

The findings of this review have implications for language educators, who should consider incorporating SRL interventions in their teaching to help students become more effective and successful language learners. SRL interventions can be used to promote self-awareness, motivation, and autonomy in language learning, which can lead to improved language proficiency. Educators should also be aware of the different types of SRL interventions and the outcomes they can achieve, in order to select the most appropriate intervention for their students and teaching context.

Future research should aim to address the limitations of this review by conducting more studies using standardized SRL interventions and larger sample sizes. Research could also explore the long-term effects of SRL interventions on language learning outcomes and investigate the effectiveness of SRL interventions in different language learning contexts, such as online or blended learning environments.

In conclusion, this systematic review provides evidence that SRL interventions can be an effective way to improve foreign language learning outcomes at the higher education level. The review identified a range of SRL interventions and language learning outcomes that can be targeted, providing language educators with guidance on how to implement SRL interventions in their teaching. The findings of this review have important implications for language education and highlight the need for further research in this area.

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