



A Review of Theoretical and Empirical Studies on Second Language Acquisition Strategies

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ABSTRACT

The review will focus on the recent theoretical and empirical research studies on the second language acquisition (SLA) strategies and will consider those studies published since 2018. It discusses categorizing strategies based on cognitive, metacognitive, affective and social strategies and direct versus indirect strategies and provides their usages in vocabulary learning, technology-based learning, and higher education settings. The review also explores the effect of learner specific factors like motivation, anxiety, and autonomy on strategy selection and effectiveness. A synthesis of the recent researches shows that there are tendencies to combine technology and AI with the old methods, to facilitate individualized and learner-centered teaching, and show that a positive correlation between strategies implementation and language performance is possible. The gaps in research are the lack of research on young learners, less popular languages among which are taught, and the necessity of long-term experimental studies. The review ends with suggestions on how the educators and researchers need to strengthen the teaching and learning of SLA strategy and how they can use the emerging technologies to maximize the outcomes of language learning.

Keywords:

Second language acquisition; SLA strategies; vocabulary learning; technology-enhanced learning; motivation; learner autonomy; cognitive strategies; metacognitive strategies; AI-assisted language learning; ESL/EFL learners

1. Introduction

The skill of becoming a second language (L2) speaker is becoming one of the basic skills in an evermore globalizing world to succeed in academia as well as to address cultural differences effectively. The process of acquisition of a language other than the native is called a second language acquisition (SLA) and it has both cognitive, social and affective aspects. In this area, language learning strategies are essential in informing the manner in which learners go about comprehending, producing, retaining and generalizing the target language. The study of SLA

strategies has increased tremendously in the last few decades, which is indicative of the increased interest in knowing not only the type of strategies used by learners but also how and why particular strategies improve language learning performance.

The conceptualization of language learning strategies has been developed in a broad way as the thoughts and actions that learners apply as a way of enhancing their performance in learning a second language. Initial preparatory research by Rubin and Oxford in the 1980s pointed to the multiplicity of such strategies and provided

taxonomies which have since led to further studies. These methods include cognitive strategies like rehearsal, elaboration and summarization to metacognitive strategies including planning, monitoring and evaluating learning activities that one is engaged in. Others are social, affective, and compensation strategies: the search of interaction with fluent speakers, anxiety-reducing strategies and guessing the meaning of unknown words based on the context. The use of strategies has been associated with increased proficiency, learner autonomy, motivation, and self-regulated learning that is more efficient.

The knowledge and impartation of SLA strategies are especially important in the formal education institutions where the teachers are required to provide the students with the resources they require to achieve independent language development. The strategic language learning does not only assist students to manoeuvre their way on classroom activities, but it also enables them to conquer issues in communication beyond the classroom. The example is the fact that learners who are aware of learning strategies in vocabulary acquisition or self-monitoring are more likely to show retention and accuracy in vocabulary acquisition, compared to learners who use rote learning. Consequently, there is a growing trend that language programs incorporate strategy training as part of its curriculum with much focus given to the fact that the effective learning of a language is not an issue of mere exposure and practice, but also a matter of the learner intentionally approaching the learning process.

Although the strategies of SLA have acquired the recognized significance, the study in the area is not one-sided. It includes both theoretical and empirical research, which has different contributions. Theoretical research seeks to conceptualize strategies and categorize, suggest models of strategy utilization and examine the connection among type strategies and other psychological constructs. These works frequently have a solid literature review as they compile the

views of cognitive science, educational psychology, and applied linguistics. Theoretical studies can provide models of the way learners control their cognition, relationship between strategies and variables of learners including motivation and anxiety, as well as, the effect of instructional context on strategy among others.

Empirical studies on the other hand are aimed at testing certain hypotheses by collecting and analyzing data. This research can be carried out by experimental design, cross-sectional survey, classroom observation or by qualitative interview. The empirical research gives facts regarding real-life learner behavior- e.g. recording what strategies are used selectively by successful and unsuccessful learners, quantifying the effect of explicit teaching strategies on language performance or analyzing the effects of technological tools on strategy use. Empirical research provides the practical use of the various strategies with researchers and practitioners testing their practical usefulness by quantifying and analyzing actual learner data to provide theoretical claims with quantifiable results.

The difference between a theoretical and empirical research does not only lie in the methodology but also in the epistemology. Theoretical literature provides conceptual lucidity and integrative insights and assists in shaping research agenda and teaching instructions. Empirical research, by contrast, does not live in abstract realities, but interacts with particular circumstances and observable impacts, and it gives evidence that can support, correct, or disprove theoretical propositions. Two strands of theory and empirical inquiry constitute a dynamic relationship in that theory informs empirical inquiry through the identification of meaningful constructs and relationships, and empirical findings informs theory, leading to revision, expansion, or different conceptualization.

The study of SLA strategies has experienced a boom over the past decade due, in part, to the development of educational technology, the growing availability of high-volume data

gathering techniques, and new views on the autonomy of the learner. It is worth noting that with the emergence of technology-enhanced language learning environments, it has become possible to study the effect of digital tools, artificial intelligence, and online platforms on the strategy use. As an example, students can now gain access to automated flashcard applications, vocabulary learning in the form of corpus-based tools, and adaptable language tutors that are able to offer feedback which is customized to the specific profiles of the individual learner. These advances have triggered a new wave of interest in comprehending how the conventional taxonomies of strategy are created in digital environments and how new affordances shape learner interaction.

With the growth in research in this field, there is an urgent necessity to consolidate the current research and find common patterns. The purpose of this review is to offer a synopsis of the theoretical and empirical literature on SLA strategies released since 2018. Using up to date works, the review showcases the conceptualization of how recent research theorizes the utilization of strategy, the methodological innovations and the effectiveness of alternative strategic methods with various groups of learners and in varying learning environments.

In particular, this review has triple objectives. It will first attempt to recapitulate some important theoretical frameworks that have been put forward over the past few years, following the development of conceptualizations of strategy use. This involves going back to the basics of taxonomies, incorporating the findings of related concepts like self-regulated learning and how the nature of technology-mediated contexts has broadened the conceptual scope of SLA processes. Second, the review is expected to summarize the empirical data on the use of strategies with the emphasis put on the studies, which examine learners reactions, effectiveness of strategy teaching, and the interplay of strategies, motivational, and affective constructs. This

review can find homogeneous patterns in the findings of different studies and also homogeneous results that can implement other research studies to find out the underlying patterns.

Third, the review reveals the gaps in the current literature and suggests the future research directions. Although the existence of a relatively large amount of literature has proven the positive links between the use of a strategy and language results, there are still concerns about causality, inter-contextual transfer, and the influence of such individual factors as age, level of proficiency and the cultural background. Besides, with the ongoing improvements in educational technologies, there are urgent appeals to investigate the possibility of utilizing new tools to facilitate customized and adaptive teaching of strategies.

Notably, this review takes an inclusive perspective, which takes into consideration both the conventional classroom students and those who learn in informal or technology-mediated places. This breadth is required since the use of strategy is not limited to the academic environment. The learners can interact with language in various situations or through the usage of mobile applications or multilingual social networks and each situation can provide them with varying opportunities to apply different strategies.

Overall, language acquisition methods continue to be one of the focal points of SLA studies that could unite the areas of theoretical research and pedagogy. Having summarized the literature of the last few years, this review leads to the better understanding of the functioning of strategies, their possibility to be taught, and the interactions between them and the characteristics of learners and the context. The results discussed will not only be useful to the scholars who will want to contribute to the academic discourse but also to teachers and curriculum developers who would want to introduce evidence-based strategy teaching that can promote successful and independent language acquisition.

2. The SLA Strategies as a part of Theory.

Second language acquisition (SLA) strategies involves a study that is highly embedded in theoretical contexts that seek to explain the conscious or unconscious approach by learners in handling language learning activities. Different models have been formulated over the decades to classify and examine the strategies adopted by the learners. Among the most powerful and a highly quoted models is the Strategy Inventory of Oxford on the issue of language learning (SILL), which presented a very thorough approach to the taxonomy of behaviors exhibited by learners when acquiring a second language. The SILL model differentiates between direct and indirect strategies to provide a systematic way of studying the manner in which learners process, practice and internalize linguistic knowledge (Oxford, 1990; Su, 2025).

2.1 Oxford's SILL Model

The SILL model by Oxford forms a foundation of the SLA research because of the methodic classification of strategies of language learning. Oxford writes that direct strategies are those actions and thoughts which are directly involved in language learning. They are cognitive, memory, and compensation strategies, which include note taking, summarization, translation strategies, and practicing with examples, mnemonics, repetition, and grouping strategies to memorize information, and compensating strategies, where the learner can fill gaps in his or her knowledge by guessing, synonyms, and using context clues. In comparison, indirect strategies facilitate the learning process indirectly through controlling the larger process as opposed to learning through handling language tasks. They include metacognitive (planning, monitoring, self-learning evaluation), affective (controlling emotions, motivation and anxiety), and social (cooperation with peers, feedback of native speakers) strategies.

The recent scholarship focuses on the idea that the SILL model is still applicable and can be adapted to the modern learning settings. An example is that Su (2025) emphasizes the need to

factor in the cultural and technological effects along with the conventional features of learners. According to Su, cultural backgrounds of learners determine not only the preferences of the learner toward selecting some strategies but also determine the efficacy of the strategies in particular instructional settings. Also, technological affordances (including digital flashcards, online collaborative tools and AI-driven language tutors) have changed the way learners implement both direct and indirect strategies and require a more nuanced interpretation that transcends the original categories of SILL.

2.2 Metacognitive and cognitive Strategies.

The key to the theoretical framework of Oxford is expression of cognitive and metacognitive strategies, which have been thoroughly explored on the theoretical and experimental front. Cognitive strategies are task-focused, intentional behaviors that are directed at understanding, creating or holding language input. Repetition, summarization, translation, and inferencing are some of the technique that are thought of to be central cognitive strategies since it entails direct manipulation of language materials. Cognitive strategies are especially efficient when language processing takes place instead of the passive consumption of the information by learners. As an illustration, summarizing a reading text is not only helpful to improve the understanding process but also serves to strengthen memory by actively engaging vocabulary and grammar patterns.

On the contrary, the metacognitive strategies are more advanced and allow the learners to plan, observe and analyze their learning processes. The activities that are covered by metacognition include goal setting, self-monitoring, self-assessment, and strategic planning. Ye (2024) believes that learner autonomy is closely linked with the application of metacognitive strategies, which enable a person to be in charge of his/her learning process and not be dependent on guidance only. Metacognition also enables the learners to distribute their cognitive resources

effectively, give priority to the challenging activities and critically evaluate and reflect on the advancement made which can greatly improve the total outcome of language acquisition.

The recent theoretical discourses, including those provided by Lan (2025) also highlight the interaction between cognitive and metacognitive strategies when it comes to dealing with affective aspects such as anxiety and motivation. According to the review of the studies published in 2008-22, Lan suggests that learners who successfully combine metacognitive monitoring with cognitive rehearsal have more self-efficacy and less language anxiety. Such an integration is particularly important in the second language learning since affective difficulties including fear of mistake making or performing in front of others can also hinder effective use of cognitive strategies. Thus, there is a growing trend in proposing theoretical models, which consist in the integration of cognition, metacognition, and affective regulation in a unified structure.

2.3 The Direct Strategies Classification.

Direct strategies are the ones, which imply direct contact with the target language. Cognitive strategies are given the core place within this category because they allow the learners to manipulate the language material directly. As an example, the students can take part in the rehearsal process, which can include repeating the new words or of making up example sentences, or even carrying out translation exercises. The other subcategory of direct strategies is memory strategies, which help the learners to store and recall linguistic information. The most widely used methods of memory have been discussed as mnemonic devices, visualization, association of words, and keyword techniques which have been theoretically supported as ways of improving long-term memory.

The third form of direct strategy is compensation strategies which enable the learners to fill gaps in their knowledge when they are faced with unknown words or construction. These are guessing meanings based on context, using

synonyms or circumlocution, and using nonverbal cues when communicating. According to Su (2025), the strategies are especially useful in real-life communication, where students should be able to maintain a fluent state and express meaning despite lack of full knowledge about lexical and grammatical structures. Moreover, recent research shows that the compensation strategies can be combined with the technological applications, e.g. online dictionaries, translation software, AI language assistants, and so on, making them applicable to a greater range of applications.

2.4 Indirect Strategies Classification.

The indirect strategies do not directly affect the language itself, but help learners to learn through promoting their general cognitive, emotional and social processes. The metacognitive strategies, which have been mentioned above, allow learners to organize studying times, track the understanding, and assess their progress themselves. It is generally accepted that these strategies are essential in self-regulated learning and enable the learners to change their way of tackling various linguistic problems and learning situations.

The strategies, which are affective ones, assist learners to cope with emotions, motivation, and stress in the process of learning a language. Positive self-talk, relaxed exercises and reward system techniques are among the techniques that help in minimizing anxiety and ensuring there is long-term interest in language activities. According to Lan (2025), affective strategies are of particular importance to learners in high communicative demand or evaluative pressure environments because emotional regulation has a direct influence on the effectiveness of cognitive and metacognitive strategies.

Lastly, social strategies entail relating with other peers, teachers or the native speakers in a bid to learn. Requesting clarification, posing questions, and engaging in group work can be regarded as the examples of social strategies that would help learners to receive genuine input, feedback, and train communicative competence. As Ye (2024)

emphasizes, social strategies are turned over to technology, through which social interaction opportunities are enlarged especially in the context of online discussion forums, language exchange platforms, and virtual classrooms that provide informational opportunities to interact beyond physical space.

2.5 Theoretical perspective Integration.

One of the most important contributions of the recent theoretical research is the combination of the traditional strategy taxonomies with the current context. Su (2025) states that even though the SILL framework offers a guiding framework, the aspects of digital literacy, cultural variability, and learner agency should be considered in modern learning environments. To illustrate, in technologically abundant environments students can use hybrid techniques that involve the use of metacognitive planning with the AI feedback as the illustration of the flexibility of the classical paradigms toward the needs of the modern era. On the same note, Lan (2025) emphasizes the necessity to address the emotional and motivational aspects as the components of strategic learning since without the corresponding affective and metacognitive support, cognitive strategies cannot be entirely effective.

Ye (2024) builds on this point of view and suggests that individuality of learners should also be explained through theoretical models. There are no strategies that are universally applicable to all learners; age, proficiency, learning style, and cultural background are among the factors that determine the strategy to be used and its effectiveness. This understanding has led to the move towards more personal approach to strategy teaching, where students are oriented towards being able to find, practice, and shape their own approaches to strategies that suit them and their contexts. Therefore, the modern theoretical approaches are gradually perceiving SLA strategies in the dynamic, contextual, and learner-oriented manner, leaving behind the fixed taxonomies in favor of the models reflecting the complexity of the actual language acquisition.

2.6 Research and Practice Implications.

Knowledge of the theoretical basis of SLA strategies has important consequences to the research and pedagogy practice. To the researchers, the good understanding of cognitive, metacognitive, affective, and social strategies offers a researcher with a window through which to conduct the research on the use of strategies, learning outcomes, and effects of interactions with the variables of the learners. In the case of educators, these theoretical insights are applied in instructional design to allow teachers to teach students strategies, provide learners with opportunities to develop autonomy, and tackle the affective impediments in the learning process. Besides, the acknowledgement of the interaction between direct and indirect strategies promotes a comprehensive approach to instructions, putting into practice, reflection, and social interaction together to promote effectiveness of learning.

Finally, the theoretical basis of SLA strategies, based on the SILL model of Oxford and extended with the current research (Su, 2025; Ye, 2024; Lan, 2025), provides a solid platform on the way the learner practices second language acquisition. The categorization of strategic learning as direct or indirect, the cognitive, metacognitive, affective and social dimensions provides researchers and educators with a holistic view on strategic learning of language. The changing body of knowledge emphasizes the significance of context, technology and individuality of learners and they indicate that effective utilization of SLA strategies cannot be simply about adhering to pre-established methods used in strategies but is rather a dynamic and responsive process that incorporates cognition, emotion, and social interaction.

3. Empirical Research SLA Strategies.

Empirical studies in the area of second language acquisition (SLA) strategies offer very important information about the way learners employ strategies in practice and the way this employed strategy influences the process of language learning. The empirical studies are based on observable evidence as opposed to theoretical

studies which mostly conceptualize the types and functions of strategies; most of these are done by surveys, experiments, classroom observations, or interviews. These researches shed light on the practicality of multiple strategies, patterns of preference of approach to different groups of learners, and guide pedagogical practice towards improved language proficiency. Recent empirical studies are extensive in terms of the level of learners being studied such as secondary school students, university students and ESL/EFL students in different educational and cultural settings.

3.1 The Empirical Research in the Secondary Education.

During the secondary school level the learners are at a critical stage of language formation whereby cognitive and metacognitive strategies can play a critical role in determining the short term performance as well as the retention in the long term. The research by Kumar et al. (2023) was aimed at examining the use of learning strategies by secondary students in English as a Foreign Language (EFL) classrooms. The research was based on a mixed research design, which incorporates the survey tools that are based on the SILL inventory, alongside the classroom observations and interviews. Findings showed significant changes in reading comprehension, vocabulary memory and writing accuracy in students who actively participated in cognitive processes like summarization, jotting down and rehearsal of vocabularies. In addition, the study also established that metacognitive strategies such as self-monitoring and planning had a strong relationship with the capacity of learners to have goals and engage in regular studying habits. Kumar et al. inferred that primary strategy instruction in secondary level can lead to the improvement of learner autonomy and academic performance.

On the same note, Syamaun et al. (2019) studied the strategy use among learners of English as a second language who study science. The researchers used questionnaires and self-reports to find out that most often the memory strategies

and compensation strategies were employed, where students used mnemonics devices and contextual guessing as their forms of dealing with new vocabulary. Notably, the research also emphasized that the students excelled at using some of the strategies but did not apply them systematically, which constrained the learning efficiency of the students in general. The results have reinforced the need to incorporate systematic strategy training in the curricula of secondary schools to eliminate the gap existing between spontaneous and effective strategy application.

3.2 Higher Education Empirical Research.

Higher education students are more autonomous in general and able to use the ability to apply complex strategies to control their learning. Rao (2025) examined the application of both direct and indirect strategies among tertiary-level learners and he used an experimental design to evaluate the influence of instructing the strategies on performance in the English language. There was explicit instruction on cognitive (e.g., summarizing, paraphrasing) and metacognitive (e.g., planning, self-evaluation) strategies presented to participants within an academic semester. Its results showed that the students who were given a systematic teaching of the strategies performed better than their counterparts in reading comprehension, writing activities, and oral proficiency tests. Rao pointed out that a combination of direct and indirect tactics had to be integrated to reach tangible benefits because without cognitive involvement, metacognitive control and self-regulation, cognitive engagement would not be enough.

Pawlak and Kiermasz (2018) expanded these findings by addressing the case of foreign language majors that learn a second or third language. They used the cross-sectional study method with the survey and classroom observation to study patterns of strategy use and how they are related to the level of proficiency. The researchers discovered that more competent learners had shown balanced use of cognitive,

metacognitive, and compensatory strategies, and the less competent learners had shown excessive use of rote memorization and individual vocabulary drills. This result indicates that there is a close relationship between diversity and adaptability of strategies and the increased performance of language. In addition, Pawlak and Kiermasz have observed that successful learners had a tendency of a reflective evaluation of the strategy, which they altered according to the task requirements and also through the feedback provided by the instructors or peers.

3.3 Trends in Varied Populations of learners.

Today, all these empirical studies demonstrate some significant trends in the usage of SLA strategies at various levels of education. First, a widely recurring finding is that strategy awareness and the explicit instructions are important in improving the language acquisition outcomes. Students that are trained to plan, monitor, and assess themselves tend to perform better than those who use instinctive or habitual methods of learning. Second, the kind of strategy used usually goes hand in hand with competence and circumstances. As an example, compensation strategies are generally common in oral communications, but cognitive and metacognitive strategies prevail in the reading and writing tasks. Third, the personal traits of learners, such as age, previous background, and motivation, play a key role in determining the choice of the strategy and its effectiveness, and thus personal approaches need to be taken in the design of instructions.

Another theme that has materialized as a result of current empirical studies is the interplay of affective and cognitive factors. Although the majority of the research is dedicated to cognitive and metacognitive strategies, there is research evidence indicating that the effectiveness of cognitive strategies could be enhanced by affective ones like anxiety regulation, self-encouragement, and goal-oriented motivation. Rao (2025) also found that learners who combined goal setting, relaxation methods and positive reinforcement had better fluency and high retention. Equally, Kumar et al. (2023)

observed that confidence and emotional regulation of the students had a significant mediating effect between the use of strategies and academic performance.

3.4 Implications on Pedagogy and Curriculum Design.

Empirical findings have considerable research as well as practice implications. In the secondary education, the focus will be on exposing the learners to a diversity of strategies so that they should possess the means of handling the vocabularies, grammar, and reading comprehension. Formal strategy training would help learners develop autonomy and establish habits that would continue into college. Empirical data prove more integrative approach in tertiary and ESL/EFL situations, which involves direct strategies, metacognitive oversight, and affective support to achieve maximum language proficiency.

Besides, empirical studies emphasize the significance of application of strategies in contexts. As an example, interventions in a classroom setting which involve real-life communication activities, group learning, and exercises facilitated by technology tend to achieve greater engagement and higher results than the one with rote activities. Both of the studies, Syamaun et al. (2019) and Pawlak & Kiermasz (2018), argue that adaptive strategies that are responsive to task complexity and linguistic demands are beneficial to the learners and that educators should promote the reflective practice and ongoing strategy modification.

4. Vocabulary Learning Strategies

Lexical acquisition is an essential part of second language acquisition (SLA), since lexical knowledge is the basis of all the features of language use, such as reading comprehension, writing, listening, and speaking. Learners need to have effective vocabulary learning strategies that will allow them to internalize, store, and actively use new vocabulary, which subsequently will increase their overall communicative competence. Over the last ten years, the research studies have grown more interested in the

strategies that learners use to build their vocabulary and the impact of these strategies on the result of language acquisition, especially with regard to ESL/EFL (Wen and Naim, 2023; Liu, 2023).

4.1 Theoretical Implications of the Vocabulary Learning Strategies.

Vocabulary learning strategies (VLS) are generally referred to as the conscious efforts that learners make to comprehend, memorize and apply new lexical elements. Theoretical frameworks allow distinguishing between cognitive, metacognitive, and social strategies, which are highly similar to the broader taxonomies of SLA strategies. Some of these cognitive strategies would involve repetition, word mapping, semantic association and mnemonic devices which directly help in memorizing and recalling words. The metacognitive strategies will be planning, supervision, and evaluation of the vocabulary learning process, whereas the social ones will be requested explanations of the words by peers or instructors and language application in communicational exchange to strengthen memorization.

According to Wen and Naim (2023), the efficiency of VLS is relative, and it depends on the proficiency, motivation, and exposure of the target language among the learners. Their analysis of the recent literature shows that, when students combine cognitive and meta-cognitive strategies, i.e. spaced repetition and self-assessment quizzes, they are more likely to retain more vocabulary and learn it more quickly. A second point that has been brought out in the study is the ability of technology-enhanced tools, such as digital flashcards, mobile applications, and corpus-based platforms, to support vocabulary learning and encouraging autonomous learning behaviors.

4.2 The Empirical Research of Vocabulary Learning Strategies.

Empirical research has always indicated that there is a positive relationship between strategic application of vocabulary learning techniques and

better language skills. In a survey of learners at university level who were studying ESL, Liu (2023) identifies that students who used the mnemonic and contextual guessing and semantic mapping as tools to aid their vocabulary acquisition reported better results on both receptive (reading and listening) and productive (speaking and writing) vocabulary tasks. The research highlights the fact that systematic and repeated practice, which is accompanied by thoughtful consideration of the use of words, has a great impact on the capacity of learners to internalize words.

Siyanova-Chanturia and Webb (2024) build on the results and discuss the impact of accidental and intentional learning of vocabulary in digital and classroom-based learning. Their study also shows that incidental exposure, reading texts or engaging with the genuine language resources, is also useful in the acquisition of vocabulary, but the intentional application of learning strategies enhances the memorization and leads to active use of newly acquired words. This implies that teaching strategy should not just be based on techniques of memorization but rather based on contextualized and communicative application so that learners may be able to integrate vocabulary in language use that is meaningful.

4.3 Type of Strategy and its effectiveness.

There are also further division of vocabulary learning strategies that are categorised into receptive and productive strategies. The recognition and understanding of words in input are majorly facilitated by receptive strategies such as reading comprehension strategies, contextual guessing and using a dictionary. The effective techniques, including writing activities, sentence structure, and speaking activities, allow the learners to put the vocabulary into practice and consolidate the memory through output. Wen and Naim (2023) point to more intensive lexical acquisition as a result of the balanced application of the receptive and productive strategies since the learners will be exposed to words through different modalities and contexts.

The other notable difference is on individual and collaborative strategies. Individual strategies enable learners to concentrate on the individualized techniques that can meet their cognitive characteristics, including flashcard memorization or semantic imaging, whereas collaborative strategies can use the interaction with peers, the teacher or online communities to strengthen vocabulary by discussing and incorporating mutual practices. As Liu (2023) notes, such a combination of approaches can result in an improved retention rate, better pronunciation, and higher fluency, which is characteristic of the synergistic action of different strategies.

4.4 Vocabulary Learning Technological Integration.

The recent works highlight the radical effect of technology in vocabulary learning. Adaptive learning platforms, spaced repetition software, and interactive mobile applications allow learners to use strategies more efficiently using digital tools. Wen and Naim (2023) also observe that self-paced, autonomous learning is enabled with the help of technologies since the student can track their progress, revise difficult words, and provide instant feedback. Likewise, Siyanova-Chanturia and Webb (2024) demonstrate that exercises that are mediated by technology may lead to the improvement of motivation and engagement, which prompts learners to explore new words in different situations, which helps build lexical networks in the brain.

The technology insertion also overlaps with the metacognitive strategies. Digital platforms frequently have analytics that assist learners to monitor patterns of learning, goal setting, and self-reflection of vocabulary acquisition, which is consistent with self-regulated learning. This mixture of cognitive, metacognitive and technological interventions has been demonstrated to speed up vocabulary learning and maintain long term language growth.

4.5 Implications of Instruction and Learning.

The results of these studies indicate some of the main pedagogical implications. To begin with, the

vocabulary learning strategies must be taught and not where they are expected to develop in the long run. The teachers can help the learners to choose right strategies according to the level of expertise, learning environment and the individual thinking style. Second, instruction on strategy must also combine both receptive and productive activities so that learners do not merely learn to identify, but also use words in meaningful communication. Third, technology and online tools have the potential to increase the effectiveness of the strategies and to promote learner independence and interest.

In addition, the strategies of vocabulary learning must be context and culturally translated. Wen and Naim (2023) also mention that students with various linguistic backgrounds might favor various strategies, and the carefulness to student preferences can contribute to motivation and decreasing the cognitive load. Lastly, the integration of personalized and group learning enables learners to be self-driven in practice and at the same time participate in valuable social interaction that would enhance the overall learning experience.

5. Strategy in Teaching and Learning Language With Technology.

Technologically enhanced second language learning (SLA) has altered the manner in which a learner engages in the learning process of language with new tools and techniques that supplement the previous ones. Technology-enhanced language learning (TELL) is a wide field; it may include computer-assisted language learning programs, online platforms, and mobile applications, as well as tutoring systems that are powered by artificial intelligence (AI). The tools provide learners with a chance to have a personalized, interactive, and self-paced learning to fill the divide between classroom learning and independent practice. According to recent research, technology can be strategically used to prominently increase vocabulary acquisition, reading comprehension, listening and communicative competence in general (Zhou and Wei, 2018; Tukhtajanovna, 2025; Firdaus, 2024).

5.1 Computer-Assisted and Technology-Mediated Learning.

The precursors to technology-enhanced SLA were computer-assisted language learning (CALL), with the use of computer software and multimedia to aid the practice of language. Zhou and Wei (2018) studied the strategies of technology-enhanced language learning and noted that the digital setting gives the students a rich and interactive input and allows them to be exposed to real-life language materials several times. They show that technology will be able to support both cognitive and metacognitive strategies, including online vocabulary activities, listening comprehension tasks with immediate feedback and interactive reading modules. These tools ensure the retention and understanding of language by allowing the learners to use various modes of presentation (text, audio, visual) enabling them to engage with the language at various levels.

Zhou and Wei also observe that technology enables learning to be at their own pace and the students have the freedom to revise the difficult material and keep track of their advancement. These practices are similar to metacognitive strategy use because learners make plans, assess, and change their studying strategies according to their performance feedback. Notably, these tools are not only efficient in knowledge acquisition, but also yield better learner motivation and engagement that are some of the major predictors of long-term language success.

5.2 The use of Artificial Intelligence in SLA.

The advent of the artificial intelligence (AI) has brought flexible and customized learning experiences that would have been hard to realize in conventional classes. Tukhtajanovna (2025) reviewed the effects of AI on language acquisition in the second language, mentioning the opportunities and disadvantages. The AI-based systems may offer real-time feedback, error prevention, and individualized suggestions to a learner on the basis of his/her learning patterns. As an illustration, the strategy utilization can be more effective and goal-oriented, with the use of

AI-powered platforms identifying the weaknesses of a learner in terms of vocabulary or grammar and recommending specific exercises.

Another area where AI is applicable is the simulation of realistic communicative activities, including conversational agents and virtual language partners, that enable the learner to practice speaking and listening in low-stress, non-threatening settings. As stressed by Tukhtajanovna, such AI-enhanced experiences may support compensation strategies, as learners will be experimenting with new words and idiomatic formations and grammar frameworks and will be provided with an immediate corrective feedback. Moreover, AI systems can have analytical tools that allow learners to engage in metacognitive reflection, which allows them to monitor progress, create individualized goals, and change learning strategies with the help of performance data.

5.3 Mobiles and Online Learning Systems.

The use of mobile applications and online has gained more relevance in SLA and these tools are flexible, accessible, and interactive. Firdaus (2024) also examined the contribution of mobile-assisted language learning to the faster acquisition of the SLA and discovered that the group that used mobile platforms in addition to classroom training reported significant improvements in the vocabulary, reading skills as well as language expressions. Mobile platforms usually have spaced repetition system, gamized activities and interactive quizzes that are effective in assisting learners exercise cognitive approaches whilst remaining motivated and engaged.

Firdaus also points out that technology will facilitate classroom learning as well as learning outside the classroom setting whereby the student can incorporate language practice into the normal routine. As an illustration, learners can also use language apps on their commute hours, participate in language forums through online conversations, or use language exchange programs through digital platforms. This ongoing exposure and the strategic application of

technological tools promotes long-term memory and reinforces the receptive and productive language abilities.

5.4 Incorporation with Traditional SLA Strategies.

The most important discovery made in the new studies is that technology mediated strategies tend to work best when combined with the traditional SLA strategies. As an example, students that incorporate AI-assisted tasks, metacognition planning, self-monitoring, and reflection reach superior performance compared to those who use technological solutions only. Zhou and Wei (2018) observe that digital resources have abundant input and interactive activities, but the conscious use of cognitive and metacognitive strategies would make learning not active but internalized and implemented.

Equally, Tukhtajanovna (2025) contends that AI-based tools are not to substitute the traditional pedagogical strategies; on the contrary, they are supposed to complement them and improve them. Synergistic impact of incorporating technology with cognitive, metacognitive, affective and social strategies has the potential to make language acquisition much more rapid, learner more autonomous, and adaptive and personalized learning processes.

5.5 Implications for Practice

Implications of technology enhanced strategies on SLA are immense. Teachers are advised to use digital tools in a strategic way, choosing tools and platforms that match particular learning goals, student traits, and abilities. The systematic instructions are essential since a learner should not only be engaged with technology, but also use the strategies with a purpose, including planning the studying time, contemplating, and rehearsing the output in the context of significant situations. In addition, AI-based analytics can create the opportunity to conduct data-driven teaching, enabling teachers to recognize the needs of learners, allocate content, and track the progress more efficiently.

Moreover, technology promotes active and self-directed learning, which promotes the leaders to be in charge of their own learning. Integrating the use of technological tools with the conventional approach to strategy training, students will be able to cultivate the competencies of the holistic language use, enhance remembering, and gain confidence in their ability to use the second language in various situations.

6. Motivation, Anxiety and Learner Factors of SLA Strategy use.

The nature or the frequency in which strategies are used is not the only factor that determines the effectiveness of the strategy in second language acquisition (SLA); personal factors of the learner such as motivation, anxiety, and self-regulation are critical in determining the nature of the strategies to be used, the strategies applied, and its effects. The studies conducted during the last decade point at the fact that the psychological and emotional conditions of learners may be considered as a prerequisite to the successful application of cognitive, metacognitive, and affective strategies or their obstacle. Therefore, the knowledge about such factors of learners is critical to developing effective pedagogical interventions that can facilitate the process of strategic language learning (Lan, 2025; Yahaya and Hasan, 2025; Saez-Zevallos and Montalvo-Apolinos, 2025).

6.1 Motivation and Strategy Choice.

Motivation has been generally identified as a key factor in strategy utilisation and language acquisition. As Lan (2025) argues, the more motivated the learner, the more they will be proactive when using cognitive and metacognitive strategies, devote time to practice, and persevere during demanding language tasks. Motivation is also known to not only influence the amount of strategy use but also its quality where learners who are more intrinsically motivated will choose more effective, adaptive and strategy that is more personal to their learning needs. A systematic review conducted by Lan, 2008-2022 emphasizes the fact that, learners who are highly goal orientated in motivation possess superior

self-regulation, planning and reflection which consequently increase their overall mastery in second language acquisition.

Yahaya and Hasan (2025) further emphasize the fact that motivation interacts with the perception of strategy utility amongst learners. Students who feel that a certain strategy is useful in meeting their personal or academic objectives would tend to adopt the same strategy more often. As an example, the vocabulary rehearsal or metacognitive planning is more rigorously followed when the learners realize its relevance to the academic achievement or the communicative skill. This conclusion suggests that instructors ought to directly relate strategy training with learner objectives, which creates motivation and supports the perceived importance of strategic training.

6.2 Anxiety and Implications of Anxiety on Strategy Applications.

Another important aspect that has a critical influence on SLA strategy use is language learning anxiety. Students with a high degree of anxiety tend to avoid, take fewer risks and use less cognitive and metacognitive processes. As Lan (2025) points out, anxiety can interfere with the implementation of some complex strategies, including the self-monitoring process when performing a speaking task or the use of compensation strategies in a communication situation. Consequently, anxious learners can stick to simpler and less efficient methods, which can hamper the growth of language and lower self-confidence.

Saez-Zevallos and Montalvo-Apolinian (2025) show that using affective strategies, including relaxation programs, positive self-talks, and goal-setting, systematically will help reduce anxiety and enhance the readiness of learners to work on difficult tasks. Their organized process of mapping the strategies in higher education situations reveal that anxiety reduction contributes to application of the strategies besides contributing to the overall learner engagement and persistence in academic work. A successful language teaching, therefore, will have

to deal with affective dimensions in conjunction with cognitive and metacognitive strategy training.

6.3 Motivation, Anxiety and Strategy Use Interaction.

Motivation and anxiety are not independent of each other; they mutually influence each other in a dynamic manner to determine strategic actions of learners. Motivation is the most effective buffer to neutralize the adverse impact of anxiety so that learners are able to continue yet difficult work activities even though they have emotional discomfort. On the other hand, high anxiety levels can demoralize the motivation that the learners have, and they may end up dropping the strategies despite knowing that it might be very helpful to them. According to Yahaya and Hasan (2025), the importance of studying this interaction is that it can equip educators with the knowledge of how to make learners adaptable and resilient, thereby able to overcome linguistic obstacles.

Lan (2025) emphasizes the empirical data according to which learners with moderate motivation and reasonable levels of anxiety are able to use a wider set of strategies, including direct (cognitive, memory, compensation) and indirect (metacognitive, affective, social) ones. Such learners also demonstrate more self-efficacy which is a confidence in their skills in planning, monitoring and evaluating language tasks. The motivational and emotional support that is incorporated in the teaching of language is thus critical in order to make the maximum out of the application of strategies.

6.4 Additional Learner Factors

Motivation and anxiety are not the only aspects of learners that cause differences in strategy choice and efficiency. Saez-Zevallos and Montalvo-Apolinian (2025) highlight the importance of the previous experience, student agency, and their cultural background. Students who have been exposed to the target language a lot are better at recognizing contextually-specific strategies, whereas students with less exposure can either memorize or use less adaptive strategies. On the

same note, cultural norms may influence the comfort of social and collaborative strategy of learners to determine how often and with what kind of interaction learning may occur.

Yahaya and Hasan (2025) also observe that strategy effectiveness is mediated by age, level of proficiency and style of learning. As an example, more is reflected in the metacognitive strategies of the advanced learners being more strategically applied than in vocabulary memorization which is a direct strategy the novice learners use to handle immediate linguistic needs. The findings present the significance of the individual strategy instruction, which is supposed to be dependent on the profile of the learner and the situational factors.

6.5 Pedagogical Implications

How motivation, anxiety and learner specific factors affect their use of a strategy has had various pedagogical implications. To begin with, teachers are supposed to create intrinsic motivation by relating language exercises to a meaningful purpose, personal interests or real communicative uses in life. Second, the application of affective support, positive feedback, and low-stress practice environments can be used to overcome the problem of anxiety in learners to increase the application of strategy and engagement. Thirdly, there should be a differentiation of teaching strategy, and this consideration should be made based on proficiency, learning style, cultural background, and previous experience to ensure maximum effectiveness is achieved.

Also, it is possible to incorporate reflective practice into instruction to enable students to track and assess their use of strategies to achieve metacognitive awareness and self-regulated learning. As Lan (2025) and Saez-Zevallos and Montalvo-Apolina (2025) indicate, strategic reflection, supported by motivational and emotional aid, allows learners to change their strategies, to keep on progressing even in the face of challenges, and to start gaining measurable improvements in language competence.

7. Synthesis and Trends in Current Research.

The last couple of years marked the period of significant changes in research on the strategies of second language acquisition (SLA), which corresponds to the changing nature of language pedagogy and technological integration. The literature published since 2018 shows an increased focus on the integration of conventional teaching methods and the use of technology, the need to teach strategies according to the needs of individual learners, and the empirical study of the correlation between the use of strategies and actual language performance (Su, 2025; Wen and Naim, 2023; Lan, 2025). This synthesis brings out the key trends that are due to investigations of both theoretical and empirical studies and as such, it gives an integrated view of recent research of SLA.

7.1 The company should combine technology and conventional strategies (7.1).

The most prevalent tendency in the recent studies is the combination of the technology-enhanced methods with traditional methods rooted in cognitive and metacognitive methods. As noted by Zhou and Wei (2018), Tukhtajanovna (2025), and Firdaus (2024), technological tools including AI-based tutoring system, mobile learning applications, and online platforms are not a substitute but supplement to traditional strategies. Integrating direct methods (e.g., repetition, mnemonic devices) with interactive digital activities, the learners get more exposure, instant feedback as well as adaptive learning routes, which leads to more effective acquisition, understanding, and communicative efficacy of vocabulary. Such integration is indicative of a move towards hybrid systems of pedagogy, in which it is the interaction between digital and classroom-based approaches that yields the best results.

7.2 Attention to Individualized and Learner-Centered Methodologies.

The recent literature constantly emphasizes the relevance of individualized strategy teaching, indicating that the individual cognitive style,

motivation, level of proficiency, and affective aspects of the learner determine the effectiveness of the strategy (Lan, 2025; Yahaya and Hasan, 2025; Saez-Zevallos and Montalvo-Apolin, 2025). Research has shown that different students have different reactions to various strategies with the more autonomous or the more motivated student adapting and choosing strategies that meet his or her needs. To illustrate, as demonstrated by Lan (2025), highly motivated individuals with minimal anxiety are more prone to utilizing a variety of strategies, that is, cognitive, metacognitive, and affective strategies; meanwhile, less confident individuals prefer to employ rote learning or passive strategies. This movement is an indicator of the shift towards learner centred SLA where the teaching of strategies is lenient, situation based and sensitive to the individual profiles of learners.

7.3. Relation between Strategy use and Real Achievement.

There is growing empirical support of the direct relationship between strategic use of language and measurable learning outcomes. The research by Kumar et al. (2023), Rao (2025), and Pawlak and Kiermasz (2018) shows that students with the systematic application of cognitive and metacognitive strategies perform better in reading, writing, speaking, and listening activities. In that manner, as reported by Wen and Naim (2023) and Liu (2023), the vocabulary learning strategies, especially the ones that combine the receptive and productive approaches, result in the increased retention and active use of the lexical items. These results emphasize the fact that the use of strategies is not only a theoretical notion but has practical implications regarding language proficiency and the importance of strategy-orientated pedagogy is justified.

7.4 Comparison of the Theoretical and Empirical Studies.

One of the trends that have been observed as a result of current research is the supplementary nature of theoretical and empirical research. Theoretical studies, including Su (2025), Ye

(2024), and Lan (2025), are detailed models of SLA strategies, divide cognitive and metacognitive ones, and suggest technology and affective strategies integration framework. Instead, empirical studies prove these models to be applicable in some real-life situations and show which strategies can be most effectively used with different groups of learners, their level of proficiency, and educational background (Syamaun et al., 2019; Rao, 2025; Kumar et al., 2023). The combination of theory and practice enables researchers and teachers to tighten the knot of strategy training making sure that it is both conceptual and empirical.

8. Gaps and Future Directions

Regardless of the development of the study of SLA strategies, a number of gaps exist. First, the number of studies devoted to young learners or speakers of less popular languages taught is insufficient, and further research reduces the generalizability of the existing results. The majority of the research focuses on ESL/EFL students at university or adult levels, and the younger group has not been explored thoroughly. Second, most of the existing empirical studies are cross-sectional or short-term and it is hard to determine the long-term impacts of strategy teaching on language competence. Experimental designs should be done over a long period to establish the sustainability and cumulative effect of strategy use.

Third, although the use of technology is on the rise, little is known about adaptive learning through AI and customized teaching, especially how the AI helps to optimize individual strategy choice and support self-regulated learning. Future research may consider intelligent tutoring system, adaptive vocabulary drills, and artificial intelligence-based feedback systems by investigating the effectiveness of these methods in various groups of learners.

Lastly, the research of the future needs to be multi-dimensional, combining various strategies cognitive, metacognitive, affective, and social together with the use of technological tools and relating the combination to tangible results in

language acquisition. Comparative research among the various cultures, levels of proficiency and fields of instruction should also be added to the field.

9. Conclusion

The strategies of second language acquisition (SLA strategies) are one of the key features of an effective language acquisition as they help the learner to understand, memorize, and apply new language forms. The last ten years of study shows the necessity of involving a combination of theoretical and practical to implement cognitive, metacognitive, affective, and social strategies, integrating them with technology enhanced tools in supporting individualized, adaptive learning.

The empirical evidence has proven how the strategic use of language has beneficial effects to the proficiency, motivation, and engagement of the learners, making evidence-based teaching of strategies essential. This means, as an instructor, teaching and modeling strategies explicitly, helping learners to be autonomous, and providing digital and AI-based resources to maximize their results. Among the researchers, the directions were also the long-term experimental research, research with younger or less frequently taught language learners and the study of AI-assisted individual language learning.

To conclude, both the theoretical and empirical studies have been synthesized to conclude that SLA strategies play a vital role in ensuring effective, autonomous and meaningful language learning. When the knowledge gaps are filled and new technologies are utilized, educators and learners will be able to acquire language more efficiently and more effectively, which will also make strategy teaching responsive and dynamic in the current situation of learning a second language.

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