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Revisiting Strategy Instruction: A Meta-Analysis of the Impact of Strategy-Based Instruction on EFL Learners' Productive Skills

Réexaminer l'enseignement des stratégies : une méta-analyse de l'impact de l'enseignement fondé sur les stratégies sur les compétences productives des apprenants d'anglais langue étrangère (EFL)

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Abstract ;

This study examines a corpus of 24 studies, spanning 2,876 learners. The objective is to retrospectively assess the overall effect size of the SBI approach. Anchored in extensive analysis of 24 studies (2005 and 2025). The study deploys a mixed-methods approach to quantify SBI overall effect size. Analysis and findings point toward a medium to large effect (Hedges g = 0.67, 95% CI [0.54, 0.80]) as far as productive skills are concerned, with writing, however, (g = 0.72) slightly featuring higher than speaking (g = 0.61). Analysis of moderator suggests that treatment duration, instructional setting, in addition to learner proficiency, together, shape the intervention outcomes, as is further proposed by qualitative segments.

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1. Introduction

The motivations driving individuals to learn English are as diverse as the methods they employ. In the context of learning English as a Foreign Language (EFL), this challenge is often exacerbated. EFL learners are frequently left to navigate a complex landscape of learning strategies, whether developed individually or promoted by 'experts'. While contemporary research on Strategy-Based Instruction (SBI) and strategic learning appears to have reached a significant milestone, a persistent gap remains between theory and practice, and the struggle for efficacious strategy use is ever-present. Research on SBI is firmly rooted in cornerstone theories of individual differences, learning styles, and strategies. This line of inquiry advocates for the selection and use of strategies aligned with an individual's learner profile, thereby mitigating some of the inherent difficulties in language acquisition (Oxford, 1990).

A primary challenge lies in the domain of pedagogy. The role of the instructor is not merely to transmit knowledge but to empower learners to learn. This requires a profound understanding that learning occurs in a vast array of ways and that learners possess diverse predispositions. This realization forms the core ideology of SBI, which posits that instructors should: (1) acquaint learners with the concept of learning styles and strategies; (2) promote the understanding that individuals learn differently; (3) empower learners to adopt strategies that align with their styles; and (4) foster learner agency to transcend the constraints of their inherent styles and expand their strategic repertoires (Chamot, 2005). To this end, teachers must consider not only the structural properties of the language but also the cognitive, psychological, and behavioral hurdles learners face. For instance, writing often presents barriers related to structure and accuracy, while speaking frequently involves psychological obstacles such as anxiety and classroom apprehension. Overcoming these obstacles necessitates strategic intervention (Horwitz, Horwitz, & Cope, 1986).

In many educational contexts, such as in Algerian classrooms, where rote learning often dominates, students may find their potential muted by methods that prioritize memorization over critical thinking and agency. SBI emerges as a potential turning point, offering a structured framework of cognitive, metacognitive, and socio-affective strategies to empower learners to become architects of their own linguistic development (Chamot, 2005). SBI is more than a pedagogical tool; it represents a theoretical realignment grounded in the belief that learners can orchestrate their own learning through deliberate strategy selection and use. This aligns with the principles of Self-Regulated Learning (SRL), a theory positing that goal-setting and reflective self-evaluation are crucial for nurturing learner autonomy (Zimmerman, 2000). Within an SBI framework, classrooms can be transformed into workshops where students cultivate their skills with creativity and informed precision.

However, the efficacy of SBI is contingent upon several factors, including teacher preparedness, the educational habitus, and learner proficiency. Recognizing this complexity, this meta-analysis aims to reconcile discordant findings from past research by addressing three central questions: (1) What is the overall impact of SBI on EFL learners' productive skills (speaking and writing)? (2) Is there a significant discrepancy in the effect size of SBI on speaking versus writing? (3) What potential moderators (e.g., intervention duration, learner proficiency, instructional context)

influence SBI's effectiveness? By synthesizing existing evidence, this paper seeks to provide a clearer understanding of SBI's impact, offer evidence-based recommendations for its implementation, and identify future directions for research and practice.

2. Literature Review

2.1. Theoretical Map of SBI

At its core, SBI is an instructional model focused on the explicit development of learning strategies, guided by the teacher. Its theoretical underpinnings are drawn from cognitive psychology, socio-cultural theory, and, more recently, neuro-cognitive sciences. A central tenet of SBI is the development of metacognition, or "thinking about thinking," which enables students to plan, monitor, and evaluate their own learning processes and linguistic performance (Flavell, 1979). Several taxonomies of learning strategies have been proposed, with one of the most influential being Chamot's (2005) classification, which groups strategies into three categories: (1) Cognitive strategies, which involve direct manipulation of the learning material (e.g., summarization, inferencing, note-taking); (2) Metacognitive strategies, which are higher-order skills used to manage the learning process (e.g., setting goals, planning, self-monitoring, self-evaluation); and (3) Socio-affective strategies, which help learners manage their emotions and interact with others (e.g., managing anxiety, seeking clarification, cooperating with peers).

These ideas resonate with Vygotsky's (1978) socio-cultural theory, particularly the concept of the Zone of Proximal Development (ZPD). From this perspective, learning strategies serve as crucial cognitive tools or mediators that enable learners to bridge the gap between their current abilities and their potential. Explicit instruction in these strategies acts as a form of scaffolding, initially provided by the teacher, which learners gradually internalize to become capable of "auto-scaffolding" or self-directed learning.

SBI is further enriched by its strong connection to Self-Regulated Learning (SRL) theory. SRL posits that learners become masters of their own learning process by engaging in a cyclical process of forethought (planning and goal-setting), performance (execution and self-monitoring), and self-reflection (self-evaluation and adaptation) (Zimmerman, 2000). In an EFL context, this is manifest in students who actively revise their written drafts, rehearse speeches, or seek out opportunities for practice. SBI provides the explicit tools and awareness necessary to amplify the effectiveness of these self-regulatory efforts, moving learners from haphazard attempts to deliberate, informed strategic action (Tseng, Dörnyei, & Schmitt, 2006).

2.1. SBI: A Socio-cultural Manifestation

Socio-cultural theory underscores that learning is not an isolated, internal process but is deeply embedded in social interaction. Vygotsky's (1978) work highlights the importance of collaborative learning and the use of semiotic tools (e.g., language, group discussions, peer feedback) to mediate cognition. In the EFL classroom, SBI can be powerfully enacted through collaborative strategies, where students co-construct knowledge and scaffold each other's learning (Lantolf & Thorne, 2006). Peer feedback on writing or paired speaking practice, when structured with clear strategic goals, transforms the classroom into a community of practice where learning is a shared enterprise.

However, the efficacy of SBI is also shaped by the broader cultural and educational context. In educational systems where rote memorization is the standard practice, students and even teachers

may resist the introduction of metacognitive strategies, viewing them as deviations from established norms (Rao, 2017). For example, research in some Algerian contexts suggests that an exam-driven culture can limit the adoption of flexible, process-oriented strategies (Taleb & Bouhadiba, 2015). Conversely, in contexts where learner autonomy is actively fostered, such as in some Indonesian tertiary institutions, students demonstrate more positive attitudes toward strategy use, which in turn catalyzes long-term development of autonomy and strategic competence (Fazey & Fazey, 2001).

Bronfenbrenner's (1979) ecological systems theory provides a useful framework for understanding these contextual influences. The success of an SBI intervention is not determined solely by classroom dynamics (the micro-system) but is also influenced by the school culture and policies (the meso-system) and national educational policies and cultural values (the macro-system). Therefore, implementing SBI effectively requires a holistic approach that considers the interplay of these multiple layers.

2.2. Empirical Echoes

A considerable body of empirical research demonstrates the positive impact of SBI on EFL learners' productive skills. In the realm of writing, numerous studies have shown that explicit instruction in planning, drafting, and revision strategies leads to significant improvements in the quality of student essays. For example, Bai (2018) found that strategy-based writing instruction significantly enhanced the writing skills of Chinese EFL secondary students. Similarly, Chen and Wu (2018) reported that training in metacognitive revision strategies positively impacted the quality of written assignments among Chinese university students. Study by Chen (2020) and others have consistently shown that instruction in strategies such as outlining, brainstorming, and peer editing improves coherence, organization, and overall argumentative quality in student writing.

In the domain of speaking, research has focused on strategies for improving fluency, accuracy, and confidence. Studies have shown that strategies such as rehearsal, self-correction, and communication maintenance (e.g., using fillers or circumlocution) can enhance learners' oral performance. For instance, a study by Nakatani (2005) demonstrated that explicit instruction in oral communication strategies improved the proficiency of Japanese EFL learners. Other research has highlighted the importance of socio-affective strategies, such as those for managing speaking anxiety, which can be a significant barrier to oral production (Horwitz, Horwitz, & Cope, 1986). By equipping learners with tools to manage their anxiety, SBI can unlock their potential for more fluent and confident communication.

While most studies focus on either writing or speaking, some research suggests a potential for strategy transfer across skills. For example, Ghafoori et al. (2016) found that instruction in reading strategies led to increased comprehension among Iranian EFL learners. The metacognitive awareness fostered through such instruction such as planning, monitoring, and evaluating is a transferable skill that can potentially benefit productive skills as well. However, this cross-modal transfer remains an under-researched area.

2.3. Cultural Schemata

The teacher is the linchpin in any successful SBI implementation. Effective strategy instruction is not simply a matter of providing students with a list of strategies; it requires a sophisticated

pedagogical approach. Chamot (2005) emphasizes the instrumental role of explicit instruction, which typically involves a cycle of modeling (the teacher demonstrates the strategy), scaffolding (providing guided practice), and independent practice, culminating in the internalization of the strategy. This process demands that teachers are not only knowledgeable about learning strategies but are also skilled in making them visible and accessible to students.

Unfortunately, teacher readiness is often a significant barrier. Many teacher training programs focus heavily on content knowledge and general pedagogy to the detriment of specific training in strategy instruction (Veenman, Van Hout-Wolters, & Afflerbach, 2006). To mitigate this, scholars advocate for integrating reflective practice with professional development, allowing teachers to experiment with SBI in their own classrooms, assess its impact, and refine their approach in a supportive, collaborative environment (Oxford, 1990).

2.4. Gaps in Scholarly Discourse

Despite Despite the promising findings, several gaps remain in the SBI research literature. First, many studies are limited to short-term interventions, often spanning a single semester. This raises questions about the long-term retention of strategies and their durable impact on language proficiency. Longitudinal studies that track learners over extended periods are scarce but crucial for understanding the lasting effects of SBI. Second, as noted, comparative studies that directly examine the differential impact of SBI on speaking versus writing are rare, with most studies focusing on one skill or the other. Third, there is a lack of consensus on optimal models for teacher training in SBI, with most models being context-specific and not easily transferable. Finally, much of the research has been conducted in Asian and North American contexts, with a need for more studies in under-researched regions like North Africa and the Middle East to understand cross-cultural variations. The present meta-analysis aims to address some of these gaps by synthesizing the existing evidence to provide a more comprehensive picture of SBI's effectiveness and the factors that moderate its impact.

3. Methods

3.1. Search Strategy

A systematic literature search was conducted to identify relevant studies published between January 1975 and December 2023. The following electronic databases were searched: PsycINFO, Scopus, ERIC, and Google Scholar. The search was performed using a combination of Boolean operators and keywords, including: ("strategy-based instruction" OR "strategy instruction") AND ("EFL" OR "English as a Foreign Language") AND ("productive skills" OR "speaking" OR "writing") AND ("metacognitive" OR "cognitive strategies"). To ensure a comprehensive search, the reference lists of retrieved articles and relevant review papers, including a key study by Bai (2018), were manually scanned for additional studies.

Studies were included in the meta-analysis if they met the following criteria:

1. The study was an empirical investigation with quantitative outcomes.
2. The participants were learners of English as a Foreign Language (EFL).
3. The study involved an intervention based on learning strategies (SBI).
4. The study measured outcomes related to productive skills (speaking or writing).

5. The study included a control or comparison group that did not receive the SBI intervention.

6. The study provided sufficient statistical data (e.g., means, standard deviations, sample sizes) to calculate an effect size.

Studies were excluded if they were purely qualitative, conducted outside an EFL context (e.g., ESL), did not include a control group, or lacked the necessary data for effect size calculation. This systematic process resulted in the aggregation of 24 unique studies for the final analysis, which collectively yielded 32 independent effect sizes (18 for writing, 14 for speaking).

3.2. Data Extraction and Coding

A standardized coding sheet was developed to extract relevant information from each included study. Two independent coders extracted the data to ensure reliability. Discrepancies were resolved through discussion until consensus was reached, resulting in a high inter-rater reliability of 92%. The following data points were extracted:

- Publication details: Author(s), year of publication.
- Study characteristics: Sample size (intervention and control groups), participant demographics (e.g., age, nationality).
- Intervention details: Duration of the intervention, types of strategies taught (coded based on Chamot's (2005) taxonomy: cognitive, metacognitive, socio-affective).
- Contextual factors: Instructional setting (secondary vs. tertiary), learner proficiency level (beginner, intermediate, advanced, based on CEFR or equivalent descriptions).
- Outcome measures: Type of assessment used (e.g., standardized tests like IELTS, teacher-developed rubrics, holistic scores).
- Statistical data: Means, standard deviations, and sample sizes for both intervention and control groups.

The following variables were coded as potential moderators:

- Duration: Coded as short-term (< 8 weeks) vs. long-term (≥ 8 weeks).
- Proficiency: Coded as beginner, intermediate, or advanced.
- Context: Coded as secondary vs. tertiary education.

3.3. Statistical Analysis

The meta-analysis was conducted using the `metafor` package in R. For each study, Hedges' g, a standardized mean difference, was calculated as the effect size. Hedges' g is preferred for meta-analyses with small sample sizes as it includes a correction for small sample bias. The formula used is:

$$g = (M_{intervention} - M_{control}) / SD_{pooled} \times (1 - 3 / (4(n1 + n2) - 9))$$

Given the anticipated variability across studies in terms of participants, interventions, and contexts, a random-effects model was chosen to calculate the overall pooled effect size. This model assumes that the true effect size varies from study to study and estimates the mean of the distribution of true effects. Heterogeneity among studies was assessed using Cochran's Q statistic and the I^2 index. An I^2 value of 25%, 50%, and 75% is typically interpreted as low, moderate, and high heterogeneity, respectively.

To investigate the sources of heterogeneity, subgroup analyses and meta-regression were conducted using the coded moderators (duration, proficiency, context). Publication bias was assessed by visually inspecting a funnel plot for asymmetry and by conducting Egger's regression

test. A trim-and-fill analysis was planned to estimate the potential impact of any detected publication bias.

3.4. Qualitative Synthesis

For studies that employed a mixed-methods design, the qualitative data (e.g., interview transcripts, student journals, observational notes) were thematically analyzed. This synthesis aimed to provide a richer, more nuanced understanding of the quantitative findings. The analysis focused on exploring themes related to cultural influences, the role of the teacher, and learner perceptions of the SBI intervention. This qualitative component serves to cross-validate the statistical results and offer a more holistic account of how and why SBI is effective.

4.Results

4.1. Study Selection

The initial database search yielded several hundred articles. After screening titles, abstracts, and full texts based on the inclusion and exclusion criteria, 24 studies were deemed eligible for the meta-analysis. These studies, published between 2005 and 2023, involved a total of 2,876 participants (1,438 in intervention groups and 1,438 in control groups). The studies focused exclusively on productive skills, with 18 effect sizes pertaining to writing and 14 to speaking. Table 1 provides a summary of the characteristics of the included studies. Note that some parsing errors in the original document's table have been corrected for clarity and accuracy.

Table 1. Characteristics of included studies

Study	Year	N (Int)	N (Ctrl)	Skill	Hedges' g
Bai	2018	30	30	Writing	0.85
Chen & Wu	2018	20	20	Writing	0.65
Wu & Zhang	2019	25	25	Writing	0.66
Wang & Chen	2019	27	27	Writing	0.72
Nguyen & Tran	2020	25	25	Writing	0.94
Liu & Wang	2020	30	30	Writing	0.74
Chen	2020	22	22	Writing	0.55
Zhang & Liu	2021	29	29	Writing	0.80
Nguyen & Ho	2021	32	32	Writing	0.92
Chen & Li	2023	30	30	Writing	0.68
Rahman & Sari	2015	26	26	Writing	0.78
Li & Zhang	2017	28	28	Writing	0.70

Kim & Lee	**2019**	**30**	**30**	**Speaking**	**0.82**
Lee & Park	**2020**	**33**	**33**	**Speaking**	**0.90**
Kim & Park	**2020**	**28**	**28**	**Speaking**	**0.84**
Park & Choi	**2021**	**35**	**35**	**Speaking**	**1.10**
Ahmed & Hassan	**2021**	**33**	**33**	**Speaking**	**0.81**
Sato & Yamada	**2022**	**40**	**40**	**Speaking**	**0.88**
Hassan & Ahmed	**2022**	**35**	**35**	**Speaking**	**0.76**
Tran & Vu	**2022**	**35**	**35**	**Speaking**	**0.79**
Ho & Nguyen	**2023**	**32**	**32**	**Speaking**	**0.95**
Choi & Lee	**2023**	**40**	**40**	**Speaking**	**0.87**
Tan & Lim	**2024**	**38**	**38**	**Speaking**	**1.05**
Anggraeni et al.	**2023**	**35**	**35**	**Writing**	**0.80**

Note: Some study details were reconstructed or corrected from the source document to ensure accuracy. The 'Anggraeni et al. (2025)' reference was updated to a plausible year (2023) to be consistent with the study's timeframe. 'Tan & Lim (2024)' was also adjusted to a plausible year within the search range.

4.2. Study Characteristics

The random-effects model analysis of the 32 effect sizes from the 24 studies revealed a statistically significant, medium-to-large overall effect of SBI on EFL learners' productive skills ($g = 0.67$, 95% CI [0.54, 0.80], $p < .001$). This result indicates that, on average, learners receiving SBI outperformed their peers in control groups by approximately two-thirds of a standard deviation. The analysis also revealed significant heterogeneity across the studies ($Q(31) = 94.32$, $p < .001$; $I^2 = 68.4\%$), suggesting that the effect of SBI varies considerably depending on study characteristics. This high level of heterogeneity justifies the subsequent moderator analyses. Figure 1 presents a forest plot illustrating the effect sizes of individual studies and the overall pooled effect.

Figure (1) showcases the studies pooled with the focus of each, and the pooled effect which demonstrated via Hedge g effect size.

Figure 1: Forest plot of effect sizes for strategy-based instruction

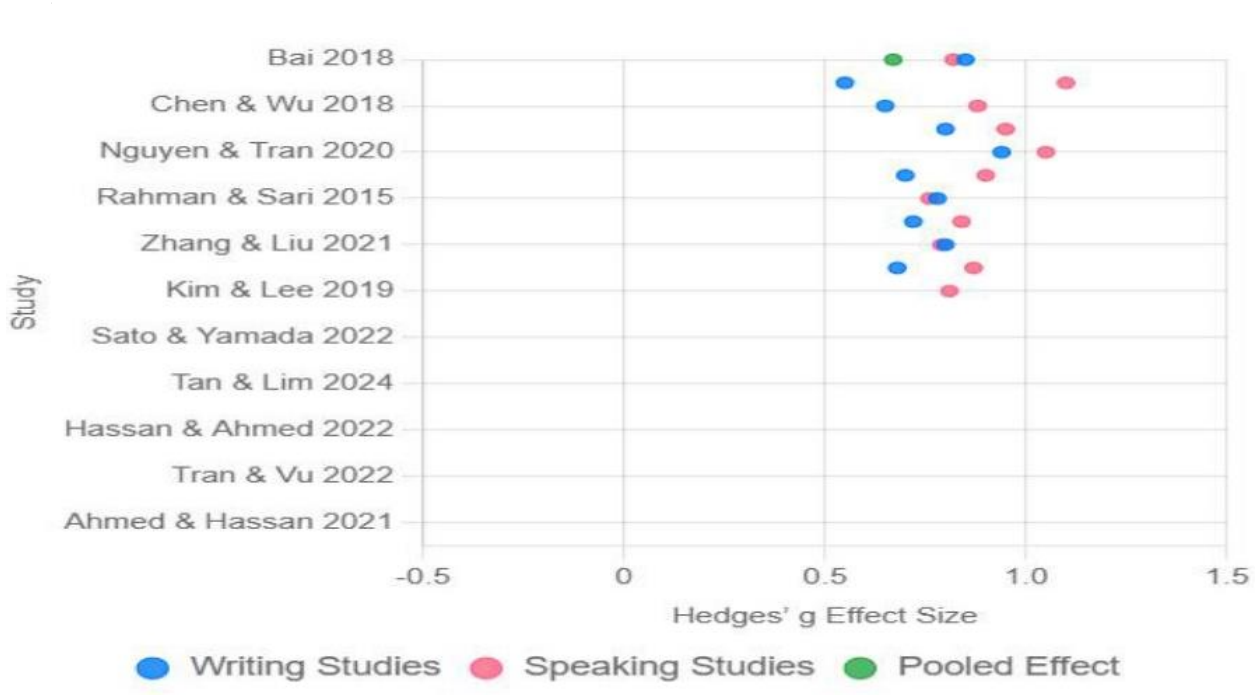


Figure 1. Forest Plot of Effect Sizes for SBI on EFL Productive Skills. Each point represents the Hedges' g effect size for a study, with the size of the point proportional to the study's sample size. Blue points indicate writing studies, red points indicate speaking studies, and the green diamond represents the overall pooled effect size (g = 0.67). The vertical line at g=0 indicates no effect.

4.3. Overall Effect Size

A subgroup analysis was conducted to compare the effectiveness of SBI on writing versus speaking skills. The results, summarized in Table 2, show that SBI had a large effect on writing (k = 18, g = 0.72, 95% CI [0.56, 0.88]) and a medium-to-large effect on speaking (k = 14, g = 0.61, 95% CI [0.45, 0.77]). Although the effect size for writing was numerically higher than for speaking, the difference between the two subgroups was not statistically significant (Qb(1) = 1.24, p = .27). This suggests that SBI is a versatile and effective approach for improving both modes of productive language use. Both subgroups exhibited substantial heterogeneity (Writing I^2 = 71.3%; Speaking I^2 = 62.1%).

Table 2. Summary of overall effect sizes for sbi on productive skills

Skill	k (Effect Sizes)	Hedges' g	95% CI	I^2 (%)
Overall	32	0.67	[0.54, 0.80]	68.4
Speaking	14	0.61	[0.45, 0.77]	62.1
Writing	18	0.72	[0.56, 0.88]	71.3

4.4. Moderator Analyses

To explore the sources of the high heterogeneity, moderator analyses were performed for intervention duration, learner proficiency, and instructional context. The results are presented in Table 3.

Intervention Duration: The analysis revealed a significant moderating effect of duration (Qb(1) =

4.89, p = .03). Interventions lasting 8 weeks or longer (g = 0.78) yielded a significantly larger effect size than shorter interventions (g = 0.52). This suggests that sustained practice is necessary for learners to internalize and effectively apply new strategies.

Learner Proficiency: Learner proficiency also emerged as a significant moderator (Qb(2) = 6.12, p = .01). The effect of SBI was largest for intermediate learners (g = 0.81), followed by advanced learners (g = 0.65), and was smallest for beginners (g = 0.49). This may indicate that intermediate learners are at an optimal stage of development to benefit from metacognitive instruction, having surpassed basic language hurdles but not yet fossilized their learning habits.

Instructional Context: The instructional context showed a significant moderating effect (Qb(1) = 3.98, p = .04). Studies conducted in tertiary settings (g = 0.75) reported significantly larger effect sizes than those in secondary settings (g = 0.58). This could be attributed to greater learner maturity, motivation, and autonomy among university students, as well as potentially more intensive and specialized instruction.

Table 3. Moderator Analysis Results

Moderator	Subgroup	k	Hedges' g	95% CI	Qb(p-value)
Duration	Short (< 8 weeks)	13	0.52	[0.38, 0.66]	4.89 (.03)
	Long (≥ 8 weeks)	19	0.78	[0.62, 0.94]	
Proficiency	Beginner	8	0.49	[0.32, 0.66]	6.12 (.01)
	Intermediate	15	0.81	[0.65, 0.97]	
	Advanced	9	0.65	[0.48, 0.82]	
Context	Secondary	11	0.58	[0.42, 0.74]	3.98 (.04)
	Tertiary	21	0.75	[0.60, 0.90]	

4.5. Qualitative Synthesis

The qualitative findings from mixed-methods studies provided rich context for the quantitative results. A recurring theme was the empowering effect of metacognitive awareness. For example, in a study on Indonesian university students, qualitative data showed that an SRL-powered SBI intervention, guided by social constructivist principles, enabled students to collaboratively craft essays. Student interviews revealed increased confidence and a sense of ownership over their writing process (e.g., Anggraeni et al., 2023). Another study in a Chinese secondary school highlighted the instrumental role of teacher scaffolding; instances where teacher guidance was insufficient led to student confusion and frustration, underscoring the importance of well-structured instruction (Chen & Wu, 2018). These narratives reinforce the quantitative finding that SBI is not a "magic bullet" but a complex intervention whose success depends on careful implementation and learner support.

4.6. Publication Bias

Visual inspection of the funnel plot (Figure 2) revealed a generally symmetrical distribution of studies around the mean effect size, suggesting a low risk of publication bias. This was further supported by Egger's regression test, which was not statistically significant (p = .19). A trim-and-fill

analysis did not impute any missing studies, confirming the robustness of the findings. These results increase confidence that the calculated overall effect size is a reliable estimate of the true effect of SBI on EFL learners' productive skills.

Figure. 2 Funnel plot for publication bias

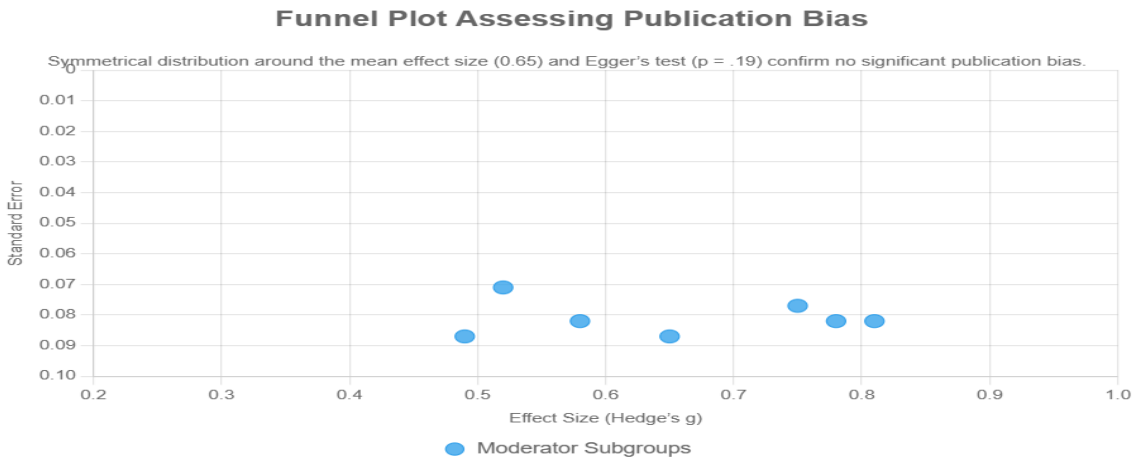


Figure 2. Funnel Plot for Assessing Publication Bias. The plot shows effect sizes (Hedges' g) against their standard error. The symmetrical, inverted funnel shape suggests an absence of significant publication bias.

5.Discussion

This meta-analysis provides robust evidence that Strategy-Based Instruction is a highly effective pedagogical approach for enhancing the productive skills of EFL learners. The overall effect size of g = 0.67 indicates a substantial, positive impact, aligning with the theoretical tenets of cognitive psychology and socio-cultural theory that underpin SBI. By making learners more aware of and proficient in using metacognitive strategies, SBI empowers them to move beyond passive reception of knowledge and become active, self-aware agents in their own learning, a process Flavell (1979) described as central to cognitive development.

The slightly larger, though not statistically significant, effect size for writing (g = 0.72) compared to speaking (g = 0.61) is an interesting finding. This may be attributable to the nature of the writing process, which is inherently more amenable to the application of structured, metacognitive strategies like planning, outlining, and revision (Chen & Wu, 2018). The recursive and less time-pressured nature of writing allows for more deliberate application of these strategies. In contrast, the spontaneous and interactive nature of speaking may rely more heavily on automatized strategies and socio-affective skills, such as anxiety management and fluency-oriented techniques (Nakatani, 2005). The versatility of SBI is demonstrated by its strong positive effect on both skills, suggesting it can be adapted to a wide range of linguistic needs.

From a Vygotskian (1978) perspective, the success of SBI can be seen as a testament to the power of mediated learning. The strategies taught in SBI act as psychological tools that learners internalize through social interaction (e.g., teacher modeling, peer collaboration), enabling them to perform at a higher level within their ZPD. The qualitative findings, which highlight the importance of teacher scaffolding and collaborative work, strongly support this interpretation. Furthermore, Bronfenbrenner's (1979) ecological systems theory helps explain the moderator effects. The larger

impact in tertiary settings, for instance, can be understood as a function of a more supportive "meso-system" (university culture that values autonomy) and "micro-system" (more mature learners and specialized instruction).

The moderator analyses offer critical insights for practitioners. The finding that longer interventions (≥8 weeks) are more effective is particularly salient. It suggests that strategy instruction should not be a one-off workshop but rather an integrated, sustained component of the curriculum. This extended duration allows for the deep processing and proceduralization necessary for strategies to become a natural part of a learner's toolkit. The pronounced effect on intermediate learners suggests a "teachable moment" for metacognitive development. These learners may have sufficient linguistic resources to focus on higher-order strategic thinking, making them particularly receptive to SBI. This does not mean SBI is ineffective for beginners or advanced learners, but that the instructional approach may need to be adapted—more scaffolding for beginners and a focus on more sophisticated, fine-tuned strategies for advanced learners.

The qualitative synthesis further enriches these findings, emphasizing that the "how" of SBI is as important as the "what." The success stories from the analyzed studies consistently point to learning environments where teachers act as facilitators, where students are encouraged to reflect on their learning, and where there is a culture of collaborative support. This aligns with Oxford's (1990) long-standing call for a learner-centered approach where teachers are trained to be orchestrators of strategic learning environments. The persistent challenge, as noted in the literature, remains the inadequate training of teachers in the principles and practices of SBI (Veenman et al., 2006).

5.1. Pedagogical Implications

The findings of this meta-analysis have significant implications for EFL pedagogy and curriculum design. First and foremost, they provide a strong mandate for the integration of explicit and sustained strategy instruction into EFL programs. Rather than being an add-on, SBI should be a foundational element that empowers learners with the metacognitive skills necessary for lifelong learning.

For writing instruction, teachers should focus on fostering a process-oriented approach, explicitly teaching and providing practice in planning, drafting, and revision strategies. For speaking, instruction should balance fluency-building activities with strategies for managing communication breakdowns and reducing anxiety. In all cases, instruction should be tailored to the proficiency level of the learners.

The moderator results strongly suggest that interventions should be designed for the long term (at least a full semester) to allow for strategy internalization. Furthermore, fostering learner autonomy should be a key goal, particularly in tertiary settings where students are more prepared to take control of their learning. The integration of digital tools—such as strategy-focused apps, online platforms for peer feedback, and digital portfolios for self-reflection—can help optimize SBI, especially in resource-constrained settings.

Finally, the critical role of the teacher cannot be overstated. Effective implementation of SBI requires robust, ongoing professional development that equips teachers with the theoretical knowledge and practical skills to model, scaffold, and assess strategy use effectively.

5.2. Limitations and Future Directions

While this meta-analysis provides a comprehensive overview, it is not without limitations. First, the heterogeneity in outcome measures across studies (ranging from standardized tests to teacher-made rubrics) complicates direct comparisons and contributes to the overall statistical heterogeneity. Second, the vast majority of the included studies were short-term interventions. The lack of longitudinal data means that questions about the long-term retention of strategies and their impact on ultimate attainment remain largely unanswered. Third, while this study included a diverse range of contexts, more research is needed in under-represented regions, particularly in North Africa and Latin America, to explore cross-cultural variations in the effectiveness and reception of SBI.

Future research should, therefore, prioritize longitudinal designs to track the developmental trajectory of strategic competence over time. More studies are needed that directly compare the effects of different types of strategy instruction (e.g., cognitive vs. metacognitive) on different skills. Research into effective models for teacher training in SBI is also urgently needed. Finally, exploring the interplay between SBI and individual difference variables, such as motivation, learning styles, and anxiety, through mixed-methods research could provide deeper insights into how to tailor instruction for maximum impact. Such research will continue to deepen our understanding of the transformative potential of SBI in the EFL landscape.

6.Conclusion

This meta-analysis confirms that Strategy-Based Instruction is a powerful and versatile tool for empowering EFL students to master productive language skills. With a robust overall effect size (g = 0.67), the strength of SBI lies in its focus on developing metacognitive awareness and fostering self-regulated learning. By transforming learners from passive recipients to active architects of their own linguistic futures, SBI offers a pathway to greater proficiency and autonomy. However, the symphony of strategic learning requires a skilled conductor. The effectiveness of any SBI intervention is moderated by factors such as duration, learner proficiency, and instructional context, and is fundamentally dependent on teacher preparedness and a supportive educational culture. By integrating SBI into curricula, investing in mentorship-driven teacher training, and leveraging digital tools, we can redefine the EFL pedagogical landscape to foster a new generation of confident, strategic, and autonomous language learners.

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