

The Role of Iranian first language as scaffolding tool in writing performance among Iranian ESP learners

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Abstract

This study examines the role of Persian (L1) as a scaffolding tool in enhancing the writing performance of Iranian learners in English for Specific Purposes (ESP) courses. Employing a quantitative research design, the study involved 100 participants who were divided into experimental and control groups. The experimental group received L1 scaffolding during writing tasks, while the control group did not. Data were collected through pre-test and post-test writing assessments, analyzed using descriptive statistics and the Kruskal-Wallis test. The findings revealed that the experimental group showed a significant improvement in their post-test scores compared to the control group, indicating that L1 scaffolding positively impacts writing performance. The results suggest that using L1 can aid learners in understanding complex concepts, reduce anxiety, and enhance overall writing quality and complexity. This aligns with Vygotsky's socio-cultural theory and Krashen's Input Hypothesis, which emphasize the importance of scaffolding and comprehensible input in language acquisition. However, potential drawbacks such as over-reliance on L1 and hindered immersion in the target language were also noted. The study recommends a balanced approach to integrating L1 in ESP instruction to maximize its benefits while minimizing its disadvantages. Further research is suggested in areas such as longitudinal studies, comparative studies across different contexts, exploration of L1's role in other language skills, and the integration of technology in facilitating L1 scaffolding. These findings have important implications for curriculum development, teacher training, and language teaching strategies in ESP contexts.

Keywords: Persian (L1), English for Specific Purposes (ESP), scaffolding, writing performance

INTRODUCTION

The role of the first language (L1) in English for Specific Purposes (ESP) learning has been a subject of considerable debate among scholars and educators. ESP, which tailors language learning to the specific linguistic needs of particular disciplines, is essential for students in specialized areas (Aliakbari & Boghayeri, 2014). For Iranian learners, mastering ESP is particularly challenging due to significant linguistic and cultural differences between Persian (Farsi) and English. The complexity of technical terminology, coupled with the need to comprehend and produce discipline-specific texts, adds layers of difficulty (Khoshsima & Khosravani, 2014).

Understanding the role of L1 in the ESP context is crucial for several reasons. The use of L1, in this case Persian, can act as a scaffolding tool, providing learners with a foundation upon which they can build their L2 skills (Vygotsky, 1978). This scaffolding can include translating complex concepts, explaining grammatical rules, and offering a sense of familiarity and comfort that facilitates learning. While the exclusive use of the target language (L2) in the classroom is often emphasized, integrating L1 strategically can enhance comprehension and performance, particularly in writing tasks (Nunan, 1991). Recent studies have highlighted the potential benefits of using L1 in ESP contexts. For instance, Imani and Farahian (2020) found that Iranian EFL learners and lecturers perceived the use of L1 as beneficial in explaining complex grammar, translating new words, and defining concepts. This suggests that L1 can serve as a valuable pedagogical tool to enhance learners' comprehension and engagement (Kerr, 2014).

However, a critical examination of these findings reveals several limitations. The reliance on L1 may hinder learners' immersion in the target language, potentially slowing down their progress in achieving fluency (Rahimi, 2020). Additionally, the overuse of L1 can lead to a dependency on translation, which may impede the development of critical thinking and problem-solving skills in the L2 context (Rahimi, 2020). Moreover, the effectiveness of L1 as a scaffolding tool may vary depending on the learners' proficiency levels and the specific ESP domain. Rahimi (2020) found that while scaffolding improved complexity and accuracy, the extent of its effectiveness was influenced by learners' prior knowledge and exposure to the target language.

In light of these findings, it is essential to adopt a balanced approach that leverages the benefits of L1 while minimizing its potential drawbacks. This requires careful consideration of the learners' needs, the instructional context, and the specific goals of the ESP program (Arfaei Zarandi & Rahbar, 2020). By critically evaluating the role of L1 in ESP learning, educators can develop more effective teaching strategies that promote both language acquisition and critical thinking skills (Carrell et al., 1988).

The primary goal of this study is to measure the role of the first language, Persian, in enhancing the writing performance of Iranian ESP learners. Specifically, the study aims to:

- 1 .Examine how Persian as L1 can be utilized as a scaffolding tool in ESP writing classes.
- 2 .Assess the impact of L1 scaffolding on the quality and complexity of learners' writing.
- 3 .Identify the benefits and potential drawbacks of incorporating L1 in ESP instruction.

By investigating these objectives, the study seeks to provide insights into effective teaching strategies that leverage the use of L1 to improve ESP learners' writing skills.

Scaffolding Theory

Scaffolding is a concept rooted in Vygotsky's socio-cultural theory of learning (Vygotsky, 1978). It refers to the support provided by a teacher or peer to a learner to help them achieve a task they would not be able to complete independently (Vygotsky, 1978). This support is gradually removed as the learner becomes more competent, much like scaffolding is removed from a building once it is no longer needed (Vygotsky, 1978). The Zone of Proximal Development (ZPD) is a key component of this theory, representing the difference between what a learner can do without help and what they can achieve with guidance (Lantolf, 2000).

Language Learning Theories

Several theories are relevant to language learning, including: Behaviorist Theory: Proposed by Skinner (1957), this theory suggests that language learning is a result of imitation, reinforcement, and conditioning (Skinner, 1957). Cognitive Theory: This theory emphasizes the importance of mental processes in learning, suggesting that learners actively construct their own understanding (Piaget, 1952). Sociocultural Theory: Vygotsky's theory also applies here, highlighting the role of social interaction and cultural context in language learning (Vygotsky, 1978). Input Hypothesis: Proposed by Krashen (1985), this theory posits that learners acquire language by understanding input that is slightly above their current proficiency level (Krashen, 1985). Interaction Hypothesis: This theory, developed by Long (1983), suggests that language acquisition is facilitated by interaction and communication with others (Long, 1983).

Integration of Scaffolding in Language Learning

Integrating scaffolding in language learning involves providing learners with tools, strategies, and support to help them understand and produce the target language (Walqui, 2006). This can include: Translation: Using the first language to explain new concepts (Imani & Farahian, 2020). Modeling: Demonstrating how to perform a task (Walqui, 2006). Feedback: Offering constructive feedback to guide improvement (Nunan, 1991). Dialogue: Engaging in conversations to practice language use (Walqui, 2006). By combining these theories and practices, educators can create a more effective and supportive learning environment for ESP learners. The integration of the first language (L1) as a scaffolding tool in second language (L2) learning, particularly in writing, has been extensively researched. Various studies have explored how L1 can facilitate understanding and improve performance in L2 writing tasks.

Literature review

Antón and DiCamilla (1999) focused on the use of L1 in collaborative writing tasks among Spanish-speaking learners. Their findings indicated that L1 facilitated collaborative dialogue, allowing learners to negotiate meaning, scaffold each other's understanding, and produce more sophisticated written texts.

Auerbach (1993) argued that the use of L1 in L2 instruction can enhance learner confidence and reduce anxiety, leading to better engagement and performance in writing tasks. Auerbach's research advocates for a more inclusive approach that values learners' linguistic backgrounds.

Council of Europe (2018) updated the Common European Framework of Reference for Languages (CEFR) to include mediation between languages as a key component. This framework supports the use of L1 in language learning to develop communicative competence and bilingual skills.

Ghobadi & Ghasemi (2015) discussed the historical context of L1 use in language teaching and its evolution over time. They highlighted the shift from grammar-translation approaches to more communicative and task-based methods that incorporate L1 as a resource.

Imani and Farahian (2020) conducted a study on Iranian EFL learners and lecturers, examining their attitudes towards using L1 in reading comprehension and its implications for writing skills. They found that learners and educators perceived L1 as beneficial for explaining complex grammar rules and translating difficult vocabulary, which indirectly enhanced writing skills by providing a solid understanding of linguistic structures.

Kern (1994) analyzed the use of L1 in writing among intermediate French learners and found that L1 use helped students organize their ideas and develop their arguments more effectively. Kern's study highlights the cognitive benefits of L1 in the writing process.

Kerr (2016) provided a comprehensive summary of research findings on the use of L1 in language teaching. Kerr argued that occasional use of L1 can be beneficial for explaining complex concepts and providing a foundation for L2 learning.

McManus & Marsden (2017) examined the effects of L1 scaffolding on L2 processing and writing performance. They found that L1 use as a scaffolding tool can increase the speed of L2 processing and enhance the accuracy of written texts.

Moorhouse, Wan, Ho, & Lin (2024) explored the use of generative AI tools, such as ChatGPT, to assist teachers in implementing evidence-informed L1 use in L2 classrooms. Their findings indicated that explicit instruction on the purposeful use of L1 can enhance teachers' knowledge and intention to use L1 effectively, ultimately benefiting learners' writing skills.

Rahimi (2020) explored the impact of scaffolding on the complexity and accuracy of narrative writing among Iranian EFL learners. The study demonstrated that scaffolding, including the use of L1, significantly improved both the complexity and accuracy of students' writing. Rahimi's findings highlight the importance of L1 as a supportive tool in enhancing the quality of L2 writing.

Shin, Dixon, & Choi (2019) conducted an updated review on the use of L1 in foreign language classrooms. Their research highlighted the importance of integrating L1 into the curriculum to maximize L2 learning. They emphasized the need for a balanced and intentional use of L1 to support writing skills and other language competencies.

Storch and Wigglesworth (2003) investigated the use of L1 in L2 writing among university students. Their study revealed that the strategic use of L1 helped students generate ideas, plan their writing, and solve linguistic problems, leading to more coherent and structurally sound texts. This research underscores the role of L1 as a cognitive tool that supports the writing process.

Swain and Lapkin (2000) conducted a study on French immersion students, showing that the use of L1 in collaborative writing tasks helped students clarify their thoughts, structure their arguments, and produce higher-quality essays. This research supports the view that L1 can be a valuable resource in writing development.

Turnbull (2001) critically examined the role of L1 in L2 classrooms, arguing that while excessive reliance on L1 can hinder language immersion, its judicious use can support language acquisition and writing development. Turnbull emphasized the need for a balanced approach that leverages L1 to build a strong foundation without impeding L2 learning.

Vygotsky (1978)'s socio-cultural theory provides a theoretical basis for using L1 in L2 learning. According to Vygotsky, learning is a socially mediated process, and tools like L1 can serve as scaffolding that supports learners' cognitive development and language acquisition.

Zhao & Macaro (2016) investigated the impact of L1 use on vocabulary learning and grammar comprehension. Their study showed that L1 support can lead to more effective vocabulary acquisition and faster grasp of grammar concepts, which in turn improves writing accuracy and complexity.

These recent studies provide a strong foundation for understanding the role of L1 in enhancing writing skills in L2 learners. By leveraging the benefits of L1 while minimizing its potential drawbacks, educators can develop more effective teaching strategies that promote both language acquisition and critical thinking skills. The literature suggests that the strategic use of L1 as a scaffolding tool can significantly enhance L2 writing skills by providing cognitive support, reducing anxiety, and facilitating idea generation and problem-solving. However, it is essential to strike a balance to ensure that L1 use does not hinder full immersion in the target language. By critically evaluating the role of L1, educators can develop more effective teaching strategies that promote writing proficiency in ESP learners.

While substantial research has been conducted on the use of the first language (L1) as a scaffolding tool in second language (L2) learning, there are several gaps that this study aims to address, particularly in the context of English for Specific Purposes (ESP) and writing skills among Iranian learners. Most existing studies on the use of L1 in L2 learning have focused on general English language learning (Shin, Dixon, & Choi, 2019). There is a need for more research specifically addressing the role of L1 in ESP contexts, where language learning is tailored to the specific linguistic needs of particular disciplines (Aliakbari & Boghayeri, 2014).

Although some studies have explored the use of L1 in improving various language skills, there is a limited focus on writing skills (McManus & Marsden, 2017). Writing is a critical skill in ESP, and understanding how L1 can support writing performance is essential for developing effective instructional strategies. Research on L1 use often lacks consideration of contextual factors, such as the specific educational and cultural background of learners (Rahimi, 2020). This study aims to fill this gap by focusing on Iranian ESP learners, considering the unique challenges they face due to linguistic and cultural differences between Persian and English (Khoshsima & Khosravani, 2014).

While some studies highlight the benefits of L1 use, others emphasize the potential drawbacks, such as hindering full immersion in L2 (Zhao & Macaro, 2016). There is a need for research that provides a balanced perspective, identifying both the benefits and limitations of L1 use in ESP writing contexts. Many studies offer snapshots of L1 use in L2 learning without examining the long-term effects (Storch & Wigglesworth, 2003). This study aims to address this by considering the longitudinal impact of L1 scaffolding on writing performance over an extended period.

By addressing these gaps, this study aims to provide a comprehensive understanding of the role of L1 as a scaffolding tool in enhancing writing performance among Iranian ESP learners, contributing to more effective language teaching practices and improved learner outcomes.

Methodology

This study will employ a quantitative research design to measure the role of the first language (L1), Persian, in enhancing the writing performance of Iranian ESP learners. The quantitative approach allows for the collection and analysis of numerical data, providing objective and statistically significant results.

Participants

The study will involve a sample of 100 Iranian ESP learners enrolled in various specialized language courses. Participants will be selected through stratified random sampling to ensure a representative distribution across different proficiency levels and fields of study.

Data Collection

Quantitative data will be collected using pre-test and post-test measures of writing performance. These tests will evaluate the quality, accuracy, and complexity of participants' writing before and after the intervention involving L1 scaffolding. The writing tasks will be standardized to ensure consistency in the assessment process. A rubric will be used to assess writing performance, focusing on aspects such as coherence, cohesion, grammar, vocabulary, and overall structure.

Procedure

To thoroughly examine the role of Persian (L1) as a scaffolding tool in enhancing the writing performance of Iranian ESP learners, the following detailed procedure will be implemented:

First, Participants divided into two groups: Experimental Group that Received L1 scaffolding during the writing tasks. Control Group: did not receive any L1 support and relies solely on L2 instruction. Then pre-test, a writing task, assesses the initial writing abilities of the participants. Participants were asked to write a 300-word essay on a topic relevant to their field of study (e.g., business, engineering, medicine). The essays have evaluated based on coherence, cohesion, grammar, vocabulary, and overall structure using a standardized rubric. They had 60 minutes to complete the writing task. The pre-test will establish a baseline measure of the participants' writing performance before any intervention.

The intervention will span 8 sessions over a period of 4 weeks, with 2 sessions per week. Each session lasted 90 minutes. **Session 1-2:** Introduction to the use of L1 as a scaffolding tool, including strategies for effective translation and explanation of complex concepts. **Session 3-4:** Practical exercises focusing on translating technical terms and constructing coherent sentences using L1 support. **Session 5-6:** Writing practice sessions where participants use L1 scaffolding to draft and revise essays. **Session 7:** Peer-review session where participants provide feedback on each other's work using L1 as a reference. **Session 8:** Final review and consolidation of the strategies learned.

The post-test mirrored the pre-test in structure and content to ensure consistency and comparability. Participants have written another 300-word essay on a different topic relevant to their field of study. The essays evaluated using the same standardized rubric as the pre-test, focusing on coherence, cohesion, grammar, vocabulary, and overall structure. Participants had 60 minutes to complete the writing task. The post-test measured the changes in writing performance after the intervention.

Data analysis:

To address the three research objectives, specific quantitative statistical methods were employed. Below are detailed descriptions of the statistical analyses for each objective:

For the first research objective, Analysis of Variance (ANOVA) was used. It is a statistical method used to compare the means of three or more groups. In this study, ANOVA will be employed to evaluate the impact of using Persian (L1) as a scaffolding tool in ESP writing classes. This method will help determine whether there are significant differences in writing performance between the groups that received different levels of L1 scaffolding.

For the Second research question, The Kruskal-Wallis test was used. It is a non-parametric method used for comparing the median ranks of three or more independent groups. It is particularly useful when the data do not follow a normal distribution or when the variances are not equal. In this study, the Kruskal-Wallis test will be applied to compare the quality and complexity of learners' writing across different groups that have been exposed to varying levels of L1 scaffolding.

And for the third research question, Cluster Analysis and Principal Component Analysis (PCA) were used to identify the benefits and potential drawbacks of incorporating L1 in ESP instruction, Cluster Analysis and Principal Component Analysis (PCA) will be utilized: Cluster Analysis: This method helps identify homogeneous groups of learners with similar characteristics or responses. By using cluster analysis, we can group learners based on their experiences and perceptions of L1 scaffolding, and analyze the common benefits and drawbacks within each cluster. Moreover, PCA is a dimensionality reduction technique that simplifies the complexity of the data by transforming it into principal components. This method will be used to identify key factors and patterns related to the use of L1, enabling a clearer understanding of its overall impact on ESP instruction.

By employing these statistical methods, the study aims to provide robust and detailed insights into the role of Persian as a scaffolding tool in enhancing the writing performance of Iranian ESP learners.

Results

Table 1: Descriptive Statistics for Pre-Test and Post-Test Scores

Group	N	Pre-test Mean	SD Pre-test	Post-test Mean	SD Post-test
Exp.	50	65.4	7.2	78.3	6.5
Con.	50	64.8	6.9	67.1	7

Table 2: Kruskal-Wallis Test Results

Group	N	Pre-test Mean	SD Pre-test	Post-test Mean	SD Post-test
Exp.	50	65.4	7.2	78.3	6.5
Con.	50	64.8	6.9	67.1	7

Research Objective 1: Examine how Persian as L1 can be utilized as a scaffolding tool in ESP writing classes

The use of Persian (L1) as a scaffolding tool in ESP writing classes showed a significant impact on the learners' writing performance. The mean pre-test score for the experimental group was 65.4, while the mean post-test score increased to 78.3. In contrast, the control group's mean pre-test score was 64.8, and their mean post-test score was 67.1. The Kruskal-Wallis test indicated a significant difference between the pre-test and post-test scores of the experimental group compared to the control group (Chi-Square = 15.37, $p < 0.001$). This finding suggests that the strategic use of L1 in explaining complex concepts, providing translations, and offering grammatical support significantly enhances writing performance in ESP classes.

Research Objective 2: Assess the impact of L1 scaffolding on the quality and complexity of learners' writing

The analysis of the writing samples revealed that L1 scaffolding had a substantial effect on the quality and complexity of the learners' writing. The experimental group showed marked improvements in coherence, cohesion, grammar, vocabulary, and overall structure. The mean post-test score of the experimental group was 78.3, reflecting a significant improvement from the mean pre-test score of 65.4. This indicates that the use of L1 helped learners to organize their thoughts more effectively, construct grammatically correct sentences, and use a wider range of vocabulary. In contrast, the control group's post-test scores showed only a minimal increase, suggesting that the absence of L1 scaffolding limited their ability to improve in these areas.

Research Objective 3: Identify the benefits and potential drawbacks of incorporating L1 in ESP instruction

The benefits of incorporating L1 in ESP instruction were evident in the significant improvements in the writing performance of the experimental group. Participants reported that L1 support helped them understand complex concepts, reduce anxiety, and feel more confident in their writing abilities. However, some potential drawbacks were noted. Over-reliance on L1 could hinder full immersion in the target language (L2), and some learners might become dependent on translations rather than developing their own L2 skills. These findings highlight the importance of a balanced approach, where L1 is used strategically to support learning without overshadowing the goal of L2 acquisition.

Discussion

The findings of this study indicate that Persian (L1) can be effectively utilized as a scaffolding tool in ESP writing classes, significantly enhancing writing performance. The experimental group, which received L1 scaffolding, showed a substantial improvement in their post-test scores compared to the control group, which did not receive any L1 support. This aligns with Vygotsky's (1978) socio-cultural theory, which emphasizes the importance of scaffolding in the Zone of Proximal Development (ZPD) for facilitating learning. The use of L1 provided learners with the necessary support to understand complex concepts and complete writing tasks that they might not have been able to accomplish independently. This is consistent with the findings of Moorhouse et al. (2024), who also highlighted the benefits of integrating L1 into the curriculum to enhance L2 learning.

The study's results clearly demonstrate that L1 scaffolding significantly impacts the quality and complexity of learners' writing. The experimental group exhibited notable improvements in coherence, cohesion, grammar, vocabulary, and overall structure. This supports the Input Hypothesis by Krashen (1985), which posits that comprehensible input slightly above the current proficiency level aids in language acquisition. By using L1, learners were able to bridge the gap in their understanding, thus producing more coherent and complex texts. McManus and Marsden (2017) also found that L1 scaffolding enhances the accuracy and complexity of L2 writing, further corroborating our findings.

The study revealed several benefits of incorporating L1 in ESP instruction. Participants reported that L1 support helped them understand complex concepts, reduce anxiety, and boost their confidence in writing tasks. This aligns with Auerbach's (1993) argument that the use of L1 in L2 instruction can enhance learner confidence and reduce anxiety. However, the study also identified potential drawbacks, such as the risk of over-reliance on L1, which could hinder full immersion in the target language. This is consistent with Turnbull's (2001) caution that excessive use of L1 can impede language immersion. Therefore, a balanced

approach that leverages the benefits of L1 while minimizing its potential drawbacks is essential, as suggested by Zhao and Macaro (2016).

Conclusion

This study has provided evidence supporting the use of Persian (L1) as a scaffolding tool to enhance the writing performance of Iranian ESP learners. The findings indicated that the strategic use of L1 can significantly improve writing quality and complexity, helping learners better understand complex concepts and reduce their anxiety. The integration of L1 helps to bridge the gap in understanding, making the transition to L2 more manageable. This study contributes to the ongoing debate on the role of L1 in language learning, aligning with theories of scaffolding and socio-cultural learning.

Limitations of the study

While this study has provided valuable insights, there are several limitations to consider: **Sample Size and Generalizability:** The study involved a limited sample size of 100 participants, which may not be representative of all Iranian ESP learners. Future studies should consider larger and more diverse samples to enhance generalizability. **Single Context:** The study was conducted in a specific educational context in Iran. Results may vary in different cultural or educational settings. Comparative studies in different contexts would be beneficial.

Implications of the study

The findings of this study have several implications for educators and curriculum designers:

Curriculum Development: Educators should consider integrating L1 strategically into ESP curriculums to support language learning. This could include providing translations of complex terms and using L1 to explain difficult concepts. **Teacher Training:** Training programs for language teachers should include strategies for effective L1 use in the classroom. This can help teachers balance the use of L1 and L2 to maximize learning outcomes. **Anxiety Reduction:** The use of L1 can help reduce learner anxiety, making them more confident in their writing abilities. This approach can be particularly beneficial for learners struggling with complex technical terms and concepts in ESP. **Enhanced Writing Skills:** By incorporating L1 scaffolding, learners can improve their writing skills in L2, leading to higher quality and more complex written texts.

Suggestions for further research

To build on the findings of this study, further research is recommended in several areas, including longitudinal studies to investigate the long-term effects of L1 scaffolding on writing performance over an extended period; comparative studies to understand the impact of L1 scaffolding across different educational contexts and cultural settings; research exploring the role of L1 in supporting other language skills such as speaking, listening, and reading for a holistic view of its impact; investigating the integration of technology, such as generative AI tools, in facilitating L1 scaffolding to offer new insights into innovative teaching methods; and examining teachers' perceptions and practices regarding L1 use to identify barriers and facilitators to its effective integration in language teaching.

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