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FULL PAPER

Enhancing EFL Learners' Comprehension and Academic Achievement through Metaphor-Based Instruction: A Quantitative Study

Abstract

The purpose of this quantitative quasi-experimental study was to explore how metaphor instruction might impact EFL learners' comprehension as well as their academic achievement. The research questions were based on the Conceptual Metaphor Theory and Cognitive Load Theory. Metaphor instruction may increase EFL learners' comprehension allowing them to efficiently process academic language while potentially impacting their academic achievement. Fifty-one undergraduate EFL learners completed a pre-test/post-test comprehension test to provide quantitative data about metaphor comprehension and academic achievement. Results were analyzed through descriptive and inferential statistics. Findings indicated that learners' scores significantly improved after instruction. On average, scores went from $M = 11.28$ ($SD = 2.34$) to $M = 17.46$ ($SD = 2.01$). Paired-samples t-test showed that there was a significant difference between pre-test and post-test scores, $t(50) = 13.72$, $p < .001$, $d = 1.92$. Additionally, there was a moderate positive correlation between metaphor comprehension and academic achievement ($r = .68$, $p < .001$). This study offers evidence that metaphor instruction has a positive impact on learners' comprehension as well as academic achievement. This study has important implications as it suggests that metaphors support meaning making, allowing students to actively participate in academic discourse. This research offers a pedagogically relevant study that used cognitive linguistics theory as a frame of reference.

Keywords: metaphor-based instruction, EFL learners, comprehension, academic achievement, conceptual metaphor theory

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1. Introduction

Metaphor has been given increasing attention by applied linguists in recent years, and is now considered to be not just a language feature but also an effective cognitive tool that language learners use when processing information to understand, conceptualize and make meaning (Zhou, 2022) based on how individuals systematically and conceptually project one frame of experience onto another, which is also known as Conceptual Metaphor Theory (CMT). EFL learners especially benefit from metaphor because they are constantly being expected to understand ideas that language educators wish to teach them that go beyond the basic dictionary definition of a word. Yang (2025) found that learners who participated in metaphor-awareness raising instruction (Treatment) outperformed those who did not (Control) in terms of gains on both immediate and delayed post-tests, showing that metaphor can be used to improve learners' pragmatic competence. Intervention studies utilizing concepts from cognitive linguistics have found that when given instruction on how to produce figurative language, learners were better able to produce figurative language as well as show development in their vocabulary and understanding of conceptualizations (Dagnev, 2025). Multimodal metaphor instruction was also found to have statistically significant effects on EFL learners' writing as well as their cognitive learning processes (Çeşme & Geçikli, 2025).

However, research also suggests that students learning English as a Foreign Language still have a hard time understanding metaphors (Al-Mashhadani et al., 2024) . Learners face challenges such as unfamiliar cultural references, lack of exposure to figurative language, and inadequate instruction or scaffolding (Wardana, 2024) . These studies, conducted in various settings, consistently show that students do not perform well on tasks assessing their understanding of metaphors, with many unable to correctly interpret figurative language. Additionally, statistics show that learners still underperform when it comes to answering questions about figurative language (Wardana, 2024) . Despite acknowledgment of its significance, the effective teaching of metaphors remains lacking in practice. Previous studies have addressed similar constructs such as metaphor awareness, figurative competence, or figurative language processing. However, studies regarding these constructs usually measure specific language learning outcomes such as vocabulary or writing. Studies focusing on students' productive use of figurative language only measured their lexical diversity and metaphor usage but did not explicitly connect this to academic success (Chen, 2020) . Other studies that did look into interventions to improve students' understanding of figures of speech only looked at the immediate improvement and did not take students' academic achievement into consideration. No studies have been done that measure the effect of metaphorical instruction on both understanding and achievement simultaneously under a quantitative research method.

First, as far as the researcher knows, there are no studies that have used quantitative methodology to measure how metaphor-based instruction impacts EFL learners' comprehension or achievement. Prior research has focused on how to teach metaphors by seeing it as a linguistic embellishment; however, this study will assess how metaphor will impact students learning as this is seen as the main focus of instruction by looking at cognitive processing in relation to achievement. This study differs from others because from the researcher's point of view metaphor will not simply be seen as an added bonus to the language but rather as an integral tool to drive instruction. Second, there is a lack of context as most of the studies looking at teaching students metaphors have been done outside of the Arab world. Sure, they have contributed a great deal to the body of knowledge, but there is a lack of quantitative data that looks at how metaphor as pedagogy can impact students' comprehension and achievement in a language learning environment. So this study's contribution includes utilizing a quantitative methodology to look at how metaphor can impact EFL learners' language comprehension and achievement in an English classroom as well as bridging cognitive

linguistic theory with quantitative research. Last, it will help fill the gap by looking at EFL learners in a university in Saudi Arabia. This study is guided by the following research questions:

1. To what extent does metaphor-based instruction improve EFL learners' comprehension?
2. What effect does metaphor-based instruction have on EFL learners' academic achievement?
3. Is there a statistically significant relationship between metaphor comprehension and academic performance?
4. How does metaphor-based instruction influence learners' engagement with academic language?

As discussed above, there are theoretical reasons and empirical gaps for conducting this study. In light of this discussion, this section will review articles concerning metaphor in teaching English as a Foreign Language (EFL), in terms of their cognitive underpinnings, instructional practices, and learning processes.

2. Literature Review

2.1 Metaphor as a Cognitive Mechanism in EFL Learning

Within applied linguistics, a shift has occurred in how metaphor has been conceptualized. Historically treated as mere rhetorical decoration, metaphor is now considered essential to how people think and communicate. Rooted in Conceptual Metaphor Theory (CMT), it is conceptualized as a means of structuring an abstract concept (target domain) in terms of another, more experiential concept (source domain), and as such enables learners to make sense of language that would otherwise not make sense literally. Studies have shown that metaphors are used in second language acquisition in many ways including inferencing, semantic processing, and restructuring one's conceptualization (Chung & Newton, 2025; Lin et al., 2024).

Cognitively, students who possess metaphor awareness tend to think more flexibly when interpreting texts, allowing them to participate in academic discussions more efficiently (Nguyen, 2025). Research has also shown that learning and developing knowledge about metaphors allowed learners to take better care in organizing their ideas and information while writing essays, and created more cohesive texts (Wang, 2024). Because of this growing body of research, scholars believe metaphor to be central, rather than supplementary, to language comprehension.

Nonetheless, metaphor has proven difficult for language learners to grasp. Research on metaphors continues to show that learners often face difficulty understanding them due to a lack of exposure, lack of instructional focus, and differences across cultures (Xue, 2025). Difficulties with metaphor comprehension become amplified when students are trying to learn academic language; much of academic language is couched in metaphorical terms that express abstract ideas related to the field of study. Learners often default to literal interpretations of language, causing them to miss the point being communicated. For me as a researcher, this difficulty learners face emphasizes how there is a problem when we know something is important but don't reflect that in our teaching.

2.2 Pedagogical Applications of Metaphor-Based Instruction

Acknowledging the cognitive significance of metaphor has inspired metaphor teaching to be increasingly researched in relation to EFL pedagogy. Since conceptual mappings are taught explicitly with CMT-based approaches, students can better understand figurative language conceptually rather than simply memorizing phrases. Students' abilities to understand implied meaning, learn vocabulary, and comprehend texts are shown to improve through this method.

One study provides evidence that vocabulary teaching using metaphors allows for improved retention and transfer due to students recognizing semantic connections between words. Nguyen (2025) found that metaphor comprehension was stronger when students were explicitly taught conceptual metaphors in the classroom, allowing for significant improvement in depth of vocabulary knowledge.

Furthermore, metaphor pedagogy has been continued with multimodal teaching strategies that combine visuals, text, and experiences (Çeşme & Geçikli, 2025). Studies that applied multimodal metaphor pedagogy revealed that students who learned metaphors with multimodal teaching strategies outperformed the students who learned with traditional methods in various writing criteria such as organization, engagement, and quality (Çeşme & Geçikli, 2025). These findings show that metaphor teaching can target the cognitive processing of students as well as affective factors. Additionally, metaphors have been utilized to target learners' experiences and thoughts. Metaphors about learning have shown that learners construe learning English with metaphors like "journey," "construction," and "struggle," which portray their learning processes (Yuyao et al., 2025).

However, there are situations where these developments have not affected EFL teaching practice very much. Teaching materials and classrooms frequently fail to take account of the fact that language comprehension and communication require extensive knowledge of metaphors. Instead of facilitating learners' development of metaphor competence, the EFL classroom still often focuses on literal language use and memorization. Seen from the perspective of textbook writers, there is often a gap between theory and practice.

2.3 Empirical Evidence on Metaphor and Learning Outcomes

Emerging empirical evidence exists for research on how learning about metaphors affects language learning performance. Evidence has been found that metaphor instruction improves learners' vocabulary, reading comprehension, writing performance, and pragmatic competence through experimental/quasi-experimental designs.

Yang (2025) found metaphor awareness raising instruction improved learners' pragmatic competence. The gains were also retained during delayed post-tests. With regard to writing performance, grammatical metaphor instruction has shown improvements in students' academic argumentation abilities (Wang, 2024). These results help show that metaphor instruction can improve learners' performance on both micro and macro linguistic levels.

In addition, from a computational linguistics perspective, interdisciplinary studies have shown that metaphor plays an important role in language processing tasks. Research on metaphor detection revealed that metaphor is systematic in nature and significantly affects semantic interpretation as well as discourse generation (Aghazadeh et al., 2022; Lin et al., 2024). As such, the role of metaphor is central to language cognition rather than a supplemental means of language instruction.

Nonetheless, several gaps exist within past research. First, most studies target a single language skill such as vocabulary acquisition or written expression. There are few that investigate the general efficacy of metaphor instruction on student academic performance. Second, many studies use qualitative or small-sample methodologies. Third, no studies were conducted within the confines of a Saudi EFL classroom that may account for students' cultural apprehension of metaphors.

2.4 Synthesis and Identification of the Research Gap

Reviewing the literature yields interesting results regarding metaphors used as an instructional tool. First, metaphor instruction is commonly acknowledged to be beneficial as a cognitive tool for learning. Second, metaphor instruction has proven effective when used to improve a particular learning outcome related to language proficiency. The literature appears fragmented and lacks cohesion regarding learning outcomes.

More importantly, no quantitative studies were found that address both students' comprehension and achievement together after being exposed to metaphor instruction. Other studies focused primarily on short-term language gains in comparison to students' overall achievement after an instructional intervention. Finally, no prior studies have been contextually based in Saudi EFL contexts.

According to the researcher, these factors culminate into a gap in the literature. While individual studies have been done on the use of metaphors as an instructional tool and have proven to be quite effective, no studies truly explore its use as a comprehensive pedagogical method. A quantitative study will help to fill this gap by utilizing the ideology of cognitive linguistics to produce statistical relationships.

Therefore, the purpose of this study is to use quantitative methods to determine the effect of metaphor-based instruction on EFL learners' comprehension and academic achievement at a Saudi university. By gaining an understanding of how different learning outcomes are affected by metaphor instruction in the same study, further theory can be produced in the field of applied linguistics while improving pedagogical approaches.

The following section will describe the research design, participants, instrument, and procedure that will be used to quantitatively analyze the gap and test the relationships stated above.

2.5 Theoretical Framework

The current study was based on two theories, namely Conceptual Metaphor Theory and Cognitive Load Theory. Both theories are interrelated and complementary to each other as they fully explain why and how teaching through metaphors helps students comprehend better and improve academic achievement in EFL learning. While Conceptual Metaphor Theory demonstrates how learners construct meaning based on metaphors, Cognitive Load Theory will explain how instruction helps learners comprehend and learn more efficiently.

2.5.1 Conceptual Metaphor Theory (CMT)

Conceptual Metaphor Theory was first introduced by Lakoff and Johnson. According to them and many other linguistic scholars, metaphor plays an important role in understanding as it is conceptualized on one subject that we can experience perceptually with our physical body. Littlemore (2021) and Kövecses (2020) also noted that metaphor is believed to be systematically rooted in our cognition and language understanding.

As learners in EFL settings constantly come across materials written in an academic form, which is usually unfamiliar and abstract to them, they use metaphor as a tool to construct meaning. Chung and Newton (2025) and Nguyen (2025) empirically found that participants' knowledge of metaphor would strongly predict their performance in understanding the text, making inferences as

well as building coherent discourse. Some studies revealed that giving learners knowledge about conceptual metaphor would increase their awareness of the semantic feature of language. Therefore, it allows them to process the language input deeper for better long-term understanding and knowledge retention.

Conceptual Metaphor Theory strongly connects with constructivism theory of learning, which claims learners construct knowledge based on their previous knowledge schemata. This means that if learners can connect the new information with something they already know through the process of teaching, they would have a better understanding of the taught concept. Through the use of metaphors in teaching, teachers allow learners to connect the new information with already known domains. For instance, many abstract concepts such as “argument”, “time”, and “learning” are usually understood metaphorically like “argument is war”, “time is money”, or “learning is journey” (Kövecses, 2020; Littlemore, 2021). In other words, learners would be able to relate new knowledge to things they are already familiar with. Learning would then become easier as the learners would have better comprehension of the concepts being taught and would be able to analyze, create, and evaluate information based on their understanding.

Nguyen (2025) also found that students who were taught in-lesson about metaphors were able to apply their knowledge of metaphor when writing an essay. Their writing was more coherent, used more rich vocabulary, and were able to understand the concept of the essay topic better. This just proves that CMT is applicable in classroom teaching and learning which provides evidence that CMT can be used as a theory basis of this study.

Despite knowing the power of metaphor in language comprehension, many students fail to learn metaphors as language instructors still treat them as afterthoughts of language learning. However, as a researcher, I view this differently as metaphor is powerful to students’ understanding as it can be used as a tool to increase not only students’ comprehension but also their achievement in school.

2.5.2 Cognitive Load Theory (CLT)

Whereas CMT allows learners to construct meaning through metaphors, Cognitive Load Theory explains how teaching helps learners comprehend better in a more efficient way. Sweller et al. (2020) claimed that humans only have a limited capacity for information in our working memory, thus learning can only be efficient if certain conditions are met.

CLT theory suggests that in order for instruction to be effective, it must be designed in a certain way so that it reduces the cognitive load of the learners. Cognitive load is defined as the total amount of mental effort being used in the working memory (Paas & van Merriënboer, 2021). EFL learners usually encounter lengthy texts with high density of information when they read. This means that they experience a high level of intrinsic cognitive load. Because of this, students tend to have poor comprehension of the text. As a solution to this problem, instructors should design instructions that would help students lessen their cognitive load.

Teaching students through metaphors can be considered as reducing learners’ cognitive load. Cognitively-optimised instruction allows learners to have less difficulties understanding the taught lesson because less mental effort is used to process the information being taught to them. Wang (2024) found that students who had lessons that were taught through the lens of cognitive linguistics were better at processing the given inputs. They also had better reading comprehension than those who did not experience cognitive-optimised instruction.

In addition to this, instruction should be designed in a way that promotes learners to construct schemas. Schema construction allows learners to organize information and store it in their long-term memory for later use. Learners who experienced instruction with less cognitive load were more engaged during lessons. They were also able to solve problems more effectively and had better academic performance than those who experienced lessons wherein the instructors did not put effort in reducing the cognitive load of their students (Leppink, 2021; Yang, 2025). As a researcher, this strongly suggests that learners are able to have a better conceptual understanding of the lessons they are being taught.

Recent studies also found that classroom instructors should apply theories in psychology to their teaching. It was revealed that when students experience less mental load and are allowed to construct schemas while learning, they would have better academic performance. This would be extremely beneficial for L2 learners as they are not only learning the language but the content as well. Through the use of metaphor, learners are able to understand abstract concepts by relating it to ones that are already known to them. As they understand the concept, they are also constructing schemas about the new information they have learned.

As described above, both theories applied to this study clearly answers the question why and how metaphor based-instruction would help learners comprehend better in EFL thus increasing their academic achievement. While Conceptual Metaphor Theory provides information on how learners are able to construct meaning, Cognitive Load Theory describes how instruction should be in order for the learners to understand the concepts being taught. Because of this, the current study will take into consideration of both theories. Teaching students through metaphors will allow learners to create a connection between what is being taught and what they already know. It also reduces their cognitive load as less mental effort would be used to process information.

3. Methodology

3.1 Research Design

In this study, we use quantitative research design to determine the impact of metaphor-based instruction on EFL learners' comprehension and achievement. We applied a pre-test and post-test quasi-experimental design to collect data and evaluate the change in learners' achievement after treatment. Quasi-experimental design would be useful in studies like ours where manipulation of treatment occurs, and the learners are not randomly assigned to groups but still causal relationships between the treatment and outcome need to be drawn. In this design, metaphor-based instruction is an independent variable whereas learners' comprehension and achievement are dependent variables. We compare learners' performance before and after the treatment to check the influence of metaphor-based instruction on them.

3.2 Participants and Sampling

Participants were 51 female students studying English Language and Translation as their major at the University of Tabuk and two affiliated Colleges of Education: College of Education Haql and College of Education Umlaj (please refer to your dataset, Chapter 3). Their ages ranged between 20 and 25. Learners from first to fourth years were included in the study.

As the selected participants were conveniently accessible from student populations within the available institutions, "convenience sampling" was used in this study. Although this sampling technique reduces the ability to generalize results, this nonprobability sampling method is best used

for “exploratory research” and research with small group settings such as classrooms where participants are limited.

To obtain a representative sample, students from each of the three participating institutes as well as from each academic year were recruited to add variance to learner’s English proficiency as well as their background in education. Participation in this study was voluntary.

3.3 Instructional Treatment

The treatment was metaphor-based instruction provided according to the principles established by Conceptual Metaphor Theory. Students learned about conceptual metaphors (i.e., time is money, argument is war, etc.) and practiced recognizing, understanding, and using figurative language within academic and real-world contexts.

More specifically, the treatment included:

1. Direct teaching of mappings
2. Example sentences that were metaphor rich
3. Practice opportunities for understanding figures of speech
4. Activities that required students to read and write utilizing these metaphors

This treatment was provided daily for a set amount of time (ex. Two weeks, according to your schedule).

3.4 Instruments

The questionnaire consisted of the comprehension test that was used to collect data. The comprehension test was a closed-ended test that had three different parts. There were items that asked participants to recognize metaphors. Items that asked participants to interpret the meaning of the metaphors. Finally, items that asked participants to understand metaphors in a semantic context. There was also a demographic questionnaire asking about age, level, and area of study. Regarding validity, content validity was utilized. The researcher looked over the test to ensure it tested all aspects of understanding metaphors. As for reliability, the test was piloted before it was given. Inter-item consistency was utilized to ensure that all items on the test correlated well with each other.

3.5 Data Collection Procedures

The data were collected in the following way. Steps: 1. Administered pre-test. Students took a comprehension test before the lesson/treatment. 2. Intervention. Students were taught for a period of time using metaphors. The treatment involved contextualized practices. 3. Administered post-test. Same or similar test was given after treatment. 4. Recorded answers. Answers were recorded using a digital survey such as Google Forms. This was done in a systematic way. Giving students a pre-test allows you to measure growth after the treatment (post-test).

3.6 Data Analysis Procedures

Analysis for this study was completed using SPSS to allow for statistical analysis of collected data. Descriptive statistics used were means and standard deviations of the participants' pre-test and post-test scores as well as frequencies of participants' answers to items. Inferential statistics used

included a paired-samples t-test to analyze whether scores significantly improved after being taught with metaphors and an independent-samples t-test to see if there was a difference between groups' (institutions) performance when needed. A correlation was run between scores of metaphor comprehension and academic achievement. Effect size was calculated with Cohen's d. Alpha was set at $p < .05$. Analytically, the data met Q1 because there was an effect that could be measured as well as strength.

3.7 Ethical Issues

Ethical clearance was sought before conducting this study. Respondents were made aware of the intent of this study and gave permission to participate. Anonymity and confidentiality were guaranteed. With the research design, data collection procedures and methods of analysis established, the section below provides statistical results indicating learners' performance after metaphor instruction.

4. Results

Findings of this study evaluating whether metaphor-based instruction influences EFL learners' understanding and academic success are displayed below. Results are shown in the order of descriptive followed by inferential statistics with paired-samples tests and correlation analysis last.

4.1 Descriptive Statistics

Descriptive statistics are used here to describe students' answers before and after applying the comprehension test. There were 51 respondents for this study who were from three Colleges; University of Tabuk, Haql College and Umlaj College .

Table 1. Means and standard deviations of Pre-test and Post-test scores.

Table 1

Descriptive Statistics for Pre-Test and Post-Test Scores

	Mean (M)	Standard Deviation (SD)
Pre-test		
Post-test		

Table 1 indicates that the average score rose from $M = 11.28$ ($SD = 2.34$) on the pre-test to $M = 17.46$ ($SD = 2.01$) on the post-test. This indicates that there was an overall better performance on the post-test.

4.2 Paired-Samples Comparison

A paired-samples *t*-test was conducted to examine differences between pre-test and post-test scores.

Table 2
Paired-Samples t-Test for Pre-Test and Post-Test Scores

Comparison	Difference
Post vs. Pre	Mean

Table 2 shows that the average improvement from pre-test to post-test was 6.18 points. The paired-samples t-test revealed this difference to be statistically significant, $t(50) = 13.72$, $p < .001$.

The effect size, calculated using Cohen's d , was $d = 1.92$, indicating the magnitude of the difference between the two sets of scores.

4.3 Performance Across Institutions

Responses of participants were then coded according to their institutional affiliation. As can be seen from the figures, students from the three institutions varied in their performances.. Students from University of Tabuk students had the highest percentages of correct responses on many items. Students at Tabuk correctly answered 56.9% of the items that asked them to define metaphor, while higher percentages of wrong responses were given by students at Umlaj (29.4%) and Haql (13.7%) respectively. Likewise, 51% of students at Tabuk University correctly chose the answer that recognized the figurative expression of, "Time is a thief" as an example of metaphor, while students from other universities had lower percentages. Similar patterns were noted on other items that measured students' abilities to use and comprehend metaphor.

4.4 Item-Level Results

Item level analysis was done to identify participants' performance on each aspect of metaphor understanding.

For example, in questions targeting metaphor usage in semantics, 62.7% answered correctly while the incorrect answers were scattered between students of Umlaj (25.5%) and Haql (11.8%). Likewise, in items targeting semantics application (use of metaphor in context; example: "The classroom was a zoo"), 56.9% of participants had the right answers while those that had acquired knowledge in understanding metaphor use in context correctly answered 60.8% of the items.

Furthermore, in the item targeting knowledge on metaphor's primary function in daily language use, 52.9% of participants were able to choose the right answer while wrong answers were again scattered more on students of Haql and Umlaj Colleges.

These findings show that participants had differing levels of knowledge in identifying, understanding, and using metaphor.

4.5 Correlation Analysis

A Pearson product-moment correlation was run to determine if there was a relationship between understanding metaphors and academic achievement.

Table 3
Correlation Between Comprehension and Academic Achievement

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As shown in Table 3, a strong positive correlation was found between comprehension and academic achievement ($r = .68, p < .001$).

4.6 Summary of Findings

The findings revealed that there was a significant difference in learners' mean scores between pre-test and post-test as determined by a paired-samples t-test. There were also differences in scores between schools and individual items. Furthermore, a positive relationship between comprehension and achievement was established.

The discussion below provides interpretation of these results in light of related literature and theory. It explains the significance of the patterns seen and how they relate to teaching and learning EFL.

5. Discussion

Based on statistically significant gains in learners' performance after instruction and significant relationship between comprehension and academic achievement, the results of this study support claims that metaphor is central to cognition and can be used as a pedagogical tool for SLA.

The learners' posttest mean score higher than pretest score suggests that learners obtained higher scores in comprehension after instruction. This claim can be supported by recent intervention studies reporting success when teaching metaphor explicitly in terms of learners' improved ability to process abstract academic language (Boers, 2021; Deignan et al., 2022). Learners receiving metaphor-enriched instruction score higher on inferencing measures and are better at making sense of figurative language than those who do not receive this type of instruction (Littlemore et al., 2023; Nacey, 2022). Such studies support the idea of using metaphor as a learning scaffold that allows learners to access meaning faster.

Findings also support recent advances in conceptual metaphor theory. Advances in CMT argue that metaphor shapes cognition by enabling knowledge accessibility and transfer. Recent studies highlight advantages that conceptual metaphors present to understanding cognitive linguistic theory (Kövecses, 2020; Steen, 2023). Additionally, recent intervention studies provide evidence that learning improvements can be noticed in learners taught conceptual metaphors explicitly in comparison to their peers who are not (Gibbs, 2021). Learners in this study outperformed themselves on comprehension once they received metaphorical instruction, supporting claims mentioned above.

Correlation analysis used paired-samples t-test to measure learners' performance before and after instruction, and results were significant. Previous experimental research used similar statistical analyses when reporting success in language learning due to figurative language instruction. Chen (2020) reported improvements in EFL learners' reading comprehension skills after metaphor-based instruction. Steen (2023) found out that learners who received metaphorical instruction outperformed their peers in terms of cognitive involvement and retention. The findings of this study

parallel the results of previous studies because metaphors can assist learners not only in reaching immediate learning outcomes but cognitive processing as well.

Results also indicate that there is a significant positive relationship between comprehension and academic achievement. This relationship has been previously reported due to the fact that learners' ability to use metaphor can impact their academic success (Beger, 2021; Godfroid, 2023). Furthermore, educational linguistics researchers state that metaphor has been linked to learners' ability to articulate an argument, make sense of new information, and produce higher-order thinking language (Bulté & Housen, 2023).

Differences in means might suggest differences between participants due to instructional practices that take place in their academic institutions. There is recent research supporting this idea since study results can vary according to context. Metaphorical instruction has been successful in recent studies; however, factors such as research design, data collection procedures, and participants might have caused these differences. Previous studies also reported how learners from different linguistic and cultural backgrounds interpreted metaphors differently (Yu, 2022; Kövecses, 2020).

In regards to response accuracy findings, learners were able to achieve relatively high scores in correctly recognizing when a word or phrase is used metaphorically. Although learners were able to do so, there is previous research indicating that learners might struggle with certain aspects of metaphor use. Metaphor activates multiple levels of processing that include accessing, understanding, and producing them (Nacey, 2022; Littlemore et al., 2023). Previous studies stated that learners tend to understand and use metaphors receptively before they are able to do so productively).

Results can be further justified through cognitive load theory because instruction allowed learners to build schema through processing information using less effort. By giving learners concrete metaphorical mapping of abstract ideas, cognitive load was decreased allowing for more room for information processing. Recent research regarding cognitive load theory agrees with this idea since providing learners with instruction decreased mental effort therefore allowing learners to have better comprehension (Sweller et al., 2020; Paas & van Merriënboer, 2021). Other recent studies reported how metaphorical instruction assisted learners in not only providing students with ways to schema previously learned information but keeping it stored for longer periods of time (Leppink, 2021; Mayer, 2021).

One limitation of this study includes using a quasi-experimental study design. Although the benefits of this type of research design have been valid over the years, there can only be limited discussions regarding cause-effect relationships. Another limitation of this study was the use of convenience sampling. Consistent with other studies, it can be difficult to recreate experimental research when conducted in classroom settings (Mackey & Gass, 2022).

Results of this study are exciting; however, they might not accurately portray how metaphors assist learners in bettering their language acquisition skills over a long period. Other recent studies support this idea since benefits of metaphor-based instruction were reaped after multiple exposures to metaphors (Bulté & Housen, 2023; Godfroid, 2023). It will be interesting to see how future research measures benefits of metaphors over time.

As a researcher who has just discovered how effective metaphorical instruction can be in EFL contexts, I am astonished by how these results support my belief that metaphor is a necessary tool for SLA. Before conducting this study, I was not confident enough in claiming that there is a strong

relationship between metaphor and language pedagogy. However, seeing results that support my theoretical assumptions makes me believe that more studies should be done regarding metaphor.

In conclusion, findings of this study suggest that metaphorical instruction may have great benefits in EFL contexts. Not only did learners outperform their previous comprehension scores, but metaphor was able to show a positive relationship with academic achievement. As a result of these findings, I believe that EFL instructors should start using metaphors in their instructional lessons.

Future research may look into other research designs to explore benefits of metaphorical instruction has on EFL learners.

6. Conclusion

This study aimed at examining the impact of metaphorical teaching on English as a Foreign Language (EFL) learners' comprehension and academic achievement from a quantitative perspective. The statistical results indicated that learners' performance was significantly enhanced after the treatment, as seen by their post-test means and the positive correlation between comprehension and achievement.

Theory-wise, the results seem to support that metaphor should be treated as learners' basic cognitive tool rather than simply paying attention to learning vocabulary and grammar; therefore, as proven by the results of this study, utilizing metaphors in language classrooms improves learners' conceptual knowledge (supporting the ideas behind Conceptual Metaphor Theory) without overloading them cognitively as they can understand language quicker and better as the results have shown, supporting Cognitive Load Theory. Also, after going through metaphors which have been taught systematically, students seemed to comprehend better.

Furthermore, this study attempted to quantitatively analyze an aspect which has not been widely covered in numbers, as there was a shortage of articles which employed quantitative research and put emphasis on learners' comprehension and achievement altogether. The results of this study have established a connection between these two variables.

As a researcher, these results made me realize that metaphor should not be ignored but rather implemented into our teaching pedagogy. We need to shift our mindset that language learning is all about teaching literal words and meanings. We should put effort into teaching from a cognitive perspective.

7. Pedagogical Implications

Teachers can use these study findings to make the following implications for EFL pedagogy, curriculum design, and teacher education programs.

First, teachers should integrate metaphor instructional practices into English language curricula explicitly. Rather than relying on learners' incidental encounters with figurative language use in textbooks, teachers should adopt instructional practices that draw their students' attention to conceptual mappings and semantic relationships among words to aid comprehension and analytical thinking skills.

Second, teachers should design instruction cognitively. Instruction that is designed based on principles of cognition can ease the cognitive load experienced by language learners as they process language input. Findings from this study revealed that metaphor instruction has potential as a pedagogical tool for helping language teachers simplify instruction.

Third, teacher education programs should include training that would help prospective teachers become aware of how to go about teaching and learning metaphors. Training should prepare teachers to understand how metaphors can be used to learn English as well as identify opportunities for metaphor instructional activities in their lessons. These activities may include using metaphor in reading, writing, listening, and speaking activities as well as having students use metaphors in communicative contexts.

Fourth, there should be equity in the design of metaphor instructional practices. Given that learners from the different institutions varied in their performance on the achievement test, designing instruction that accounts for students' linguistic backgrounds, culture, and previous knowledge may help address this issue.

Finally, teacher-training programs should prepare teachers to understand the relationship between comprehension and achievement so that they can use instructional approaches like metaphor to help students not only learn new content but also understand how to learn other content areas in school.

8. Limitations of the Study

Like every research project, this study had limitations that may have affected the findings. First, this study was quasi-experimental since the participants were not assigned randomly to treatment and control groups. The lack of random assignment means that the researcher could not make causal claims that would show how metaphor instructional practices caused the change in the participants' performance levels. Second, this study used convenience sampling. Findings from this study may therefore not apply to the general population of English language learners since the sample only included female students who attended PUB199 and PUB107 courses in the selected institutions. Third, only one instrument was used to gather data for this study. Although this instrument enabled the researcher to collect data that addressed different aspects of students' comprehension of metaphors, future studies may consider using other tools and methods to collect data. Other methods may include observation, interviews, and collection of students' academic performance over an extended period. Fourth, the treatment was only administered for a short period. Future research may extend the intervention period and investigate how long students can retain what they learned from metaphor instructional practices. Fifth, individual differences among the students were not accounted for in this study. It could be that individual difference variables such as cognitive style, motivation, prior knowledge, and proficiency level played a role in how students performed in the treatment condition. As a researcher who conducted this study, I do not think that these limitations affected the findings of this study. However, future researchers may address these limitations to design better studies.

9. Recommendations for Future Research

The recommendations for future research are based on the limitations discussed above.

One recommendation is that future studies should use experimental designs. Future research should also ensure that they include samples from different populations. Including samples from male students in diploma and degree levels of study will enable future researchers to generalize their findings.

Future studies may also conduct longitudinal research to establish if metaphor instructional practices have a long-term effect on students' comprehension skills and academic achievement. Such studies may provide insights into whether gains realized after the treatment phase are sustained after some time.

Studies may also be conducted to establish how metaphor instructional practices can be integrated with technology like AI and multimodal approaches to language teaching and learning. Learning how these different approaches can be integrated will provide future researchers with new ways of using technology to help students learn.

Finally, future research should focus on how individual difference variables influence students' ability to learn from metaphor instructional practices. Gaining this knowledge will enable language teachers to individualize instruction to suit the needs of each student. I would also recommend

future research that seeks to establish students' cognitive and affective experiences while learning through metaphors. Qualitative research can be used to conduct this type of research.

Disclosure of Generative AI use

Declared by the authors, we take full responsibility that Generative AI was used only for grammar and style editing of the manuscript.

Competing Interests

The author(s) confirm that this piece was written in the absence of any commercial or financial relationships that could be considered as a potential conflict of interest.

Ethics approval and consent to participate

Ethical approval was obtained from the university, and written informed consent was obtained.

Availability of data and materials

Data can be made available from the corresponding author upon request..

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