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An Investigation into Teaching English Prepositions to EFL University Students through Image Schema Theory

(Extracted from the Master's thesis)

Przha Hassan Rashid¹, Hoshang Farooq Jawad²

1- English Department, Komar University of Science and Technology, Iraqi Kurdistan Region

2- Department of English, College of Basic Education, University of Sulaimaniyah, Iraqi Kurdistan Region

Article Info		Abstract:
Received	July, 2025	English prepositions pose persistent challenges for EFL learners due to their semantic complexity, context sensitivity, and high frequency in natural language. Traditional instructional methods often fail to address the conceptual depth required for mastery, leading to frequent learner errors and low retention. This study investigates the effectiveness of Image Schema Theory (IST)—a cognitive linguistics framework grounded in embodied experience—in improving the comprehension and retention of six commonly used prepositions (in, on, at, over, of, and about) among Kurdish university-level EFL learners. A mixed-method quasi-experimental design with 100 students studying Foundation 1 at Komar University of Science and Technology was used who were divided into experimental and control groups. The experimental group underwent six weeks of IST intervention, while the control group followed traditional grammar-focused methods. Data were collected through pretests and posttests. Results revealed that the schema-based instruction significantly enhanced learners’ conceptual understanding and long-term retention of prepositions compared to conventional methods. The present findings lend support to the application of cognitive linguistic principles to EFL teaching and indicate the pedagogical potential of grounding abstract grammatical items in embodied, visual-spatial knowledge.
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Corresponding Author		
przha.hassan@komar.edu.iq hoshang.jawad@univsul.edu.iq		

1. Introduction:

Learning English prepositions is challenging for learners of English as a foreign language (EFL), particularly because they are polysemous and encompass complex and abstract semantic and conceptual parameters. This means that a single preposition often has several closely related, but distinct, meanings depending on the context (Tyler & Evans, 2003; Celce-Murcia & Larsen-Freeman, 1999; Littlemore, 2009). EFL learners often struggle to perceive the meanings of prepositions and to use them accurately in self-expression. This problem is particularly evident among Kurdish students. Traditional pedagogical methods predominantly rely on rote memorization, translation, and superficial grammatical explanations, far removed from solid concept building and sustained retention. This leads to consistent student confusion, misuse, and limited communicative competence (Ölçer, 2024).

To address these limitations, cognitive linguistics offers an attractive alternative, because it sees language as an integral aspect of human cognition that arises from embodied, experiential interaction (Evans, 2019). Within this theoretical framework, Image Schema Theory—based on the work of Lakoff and Johnson (1980), and later developed by Johnson (1987) and Lakoff (1987)—emphasizes the idea that linguistic structures are grounded in sensory-motor experience. Image schemas such as CONTAINMENT, SUPPORT, and PATH structure human thinking and provide learners with intuitive tools for grasping abstract linguistic concepts. Hence, the teaching of English prepositions based on Image Schema Theory can significantly improve understanding and recall in Kurdish university-level EFL students, offering a cognitive rather than purely linguistic account of meaning.

Accordingly, this study compares the pedagogical effectiveness of Image Schema Theory in teaching six English prepositions—*in*, *on*, *at*, *over*, *of*, and *about*—with a focus on learners' understanding and retention of their meanings and usage. The overarching goal is to assess the efficacy of schema-based instruction in enhancing Kurdish EFL learners' conceptualization of English prepositions while also proposing practical, cognitively grounded applications for classroom teaching. By integrating cognitive linguistic principles into pedagogy, the study seeks to promote deeper understanding, long-term retention, and more effective use of prepositions in real communicative contexts.

This research contributes to both cognitive linguistic theory and practical language instruction. Academically, it provides empirical support for Image Schema Theory in EFL contexts by demonstrating how cognitive principles enhance learners' comprehension of abstract prepositional meanings. Practically, it introduces a conceptually grounded teaching approach that moves beyond rote memorization—implemented through visual schemas, spatial diagrams, and embodied classroom activities—and supports Kurdish EFL educators with more effective tools for teaching prepositions.

To explore these issues in depth, the study addresses the following research questions:

1. To what extent does Image Schema Theory-based instruction improve Kurdish EFL learners' comprehension and retention of selected English prepositions?
2. What are the statistically significant differences in learning outcomes between learners taught using image-schema-based methods and those taught using traditional approaches?

2. Theoretical Background

2.1 Cognitive Linguistics and the Embodied Nature of Language

Cognitive linguistics is a modern approach on language study that views language as a part of general cognition, affected by how humans perceive and act with the world around them (Johnson, 2015). It is opposed to the formalist approaches, which treat language as an autonomous, self-contained system governed by abstract rules and structures, independent of meaning or cognitive processes. As Croft and Cruse (2004) point out, cognitive linguistics reject the idea of a modular language faculty; instead, it asserts

that language arises from and is a projection of broad cognitive processes such as perception, attention, categorization, and memory. Langacker (1987) similarly argued in *Cognitive Grammar* that linguistic constructions directly map onto conceptual organization, connecting grammar and meaning with cognitive operations.

One of the central tenets of cognitive linguistics is that meaning is based in embodied experience (Johnson, 1987; Lakoff, 1987). Instead of being abstract or arbitrarily imposed, linguistic meaning is conceptual and intimately related to how the human body operates in physical space. Language in this view is thus conceived as a product of and a window onto conceptual structures arising from sensorimotor experiences which can be systematically studied (Evans, 2019). This is the basis for many cognitive linguistic theories, such as Image Schema Theory, which offers powerful insights about how learners conceptualize and acquire spatial and abstract aspects of language such as prepositions (Hampe, 2005).

2.2 Image Schema Theory

The Image Schema Theory is considered one of the most important constructs within cognitive linguistics, particularly with implications for the creation of meaning and conceptualization. Introduced by Johnson (1987) and further developed by Lakoff (1987), image schemas are patterns of embodied experiences that reoccur and shape human thought. Such schemas arise from the sensorimotor experiences of motion, balance, force and spatial orientation, and they are the foundation of more abstract concepts. As Johnson (1987) explains, image schemas are preconceptual structures that derive from our interaction with our physical environment.

These schemas are not detailed visual images but rather abstract and dynamic structures that aid in creating meaning. They are schematic, devoid of particular contents, but serve as a foundational framework for thinking, understanding, and linguistic expression. For example, common image schemas include *CONTAINMENT* (e.g., something in a boundary), *PATH* (e.g., motion from a source to a goal), *SUPPORT* (e.g., one entity resting upon another), *CONTACT* (e.g., two entities touching or meeting at a boundary or surface), *UP-DOWN* (e.g., vertical orientation based on gravity or balance), etc. These schemas are metaphorically expanded beyond a purely spatial structure to express complex or abstract relationships in language, as seen in expressions of time, emotion, or causality (Lakoff, 1987).

In language acquisition, especially spatial prepositions, image schemas assist learners in conceptualizing meanings that are difficult to capture through translation or rote learning. As Evans (2019) highlights, such schemas provide learners with a mental framework through which the meanings of prepositions become experientially and cognitively accessible. This is particularly relevant to EFL contexts, where the conventional EFL instruction methods typically do not take into account the situated, embodied and conceptual character of meaning.

The pedagogical value of image schemas lies in their ability to connect language to lived experience, transforming abstract linguistic items into conceptually rich, learnable patterns (Ansari, 2019). This model underpins the instructional approach to prepositions in the present study, offering an alternative to traditional grammatical explanations by focusing instead on how meaning is situated within human cognition and perception.

2.3 Relevance of Image Schemas to Language Learning

Prepositions are known to be difficult for English language learners to master due to several interrelated linguistic and cognitive factors. As Koffi (2010) observes, prepositions are extremely polysemous and the majority have several meanings depending on context, which make them especially frustrating for learners who seek stable semantic boundaries. Learners' output contains substitution, omission, and addition errors, which mainly result from a misunderstanding of prepositional meaning. In addition, as Lam (2009) explains, many prepositions are monosyllabic and thus difficult to perceive clearly in rapid speech,

complicating both recognition and acquisition. Cross-linguistic differences further intensify the challenge, since equivalent prepositions rarely align semantically across languages. For example, the Spanish preposition - “por”- may correspond to several different English prepositions depending on context (e.g., for, by, through, during) which can often lead to negative transfer and syntactic errors when learners apply L1 patterns to L2 usage (Lam, 2009). Moreover, the sheer number of English prepositions—estimated between 60 and 70—exceeds that of most other languages, making the system difficult to internalize or predict (Koffi, 2010; Catalan, 1996). Together, these factors make prepositions among the most conceptually complex and pedagogically challenging elements of English grammar.

Image Schema Theory offers a compelling cognitive explanation and instructional solution to this challenge. By grounding meaning in bodily and spatial experience, image schemas provide learners with internalized mental structures that are intuitive and transferable. Instead of memorizing each prepositional phrase as a separate lexical item, learners are guided to conceptualize prepositions through spatial and metaphorical patterns that reflect fundamental concepts in human cognition (Johnson, 1987; Lakoff, 1987). As Littlemore (2009) emphasizes, cognitive linguistics has practical value by helping language learners map abstract prepositional meanings onto concrete embodied conceptual patterns. For example, the preposition “in” aligns with the CONTAINER schema, which conceptualizes objects or abstract ideas as being inside bounded spaces (e.g., in the box, in trouble). Similarly, the preposition “through” reflects the PATH schema, representing movement from a source, along a trajectory, to a goal (e.g., walk through the tunnel).

The relevance of this approach lies in how it alters the dynamics of learners’ engagement with meaning and with linguistic form, in a way that makes them see it not as arbitrary, but as carrying its own embodied experience. This transition is consistent with basic tenets of meaningful learning theory and cognitive psychology, which suggest that when new information is linked to pre-existing cognitive structures, deeper understanding can be achieved. Image schemas, as Evans (2019) and Hampe (2005) note, can function as conceptual scaffolds that help learners generalize from concrete spatial usage to more abstract expressions of time, emotion, or logic, as an important aspect in preposition learning.

The relevance of this theory lies in its ability to bridge the gap between abstract linguistic input and learners’ cognitive readiness for internalizing the input, especially for EFL learners who are not immersed in an English-speaking environment. By enabling structured conceptualization, image schemas promote retention, accuracy, and transferability in language learning—areas where grammar-based approaches often falls short (Fujii, 2016).

2.4 Review of Previous Studies on Teaching Prepositions through Image Schema Theory

There is a growing body of research supporting the use of Cognitive Linguistics—particularly Image Schema Theory (IST)—in enhancing the acquisition of English prepositions among EFL learners. These studies consistently affirm the potential of schema-based instruction to improve learners’ comprehension and retention of prepositional meaning.

Aajami (2019), for instance, focused on the polysemy of the preposition *in* among Iraqi EFL learners, using a pretest–posttest design with 76 university students. The study reported a significant improvement in learners’ comprehension (mean gain from 13.00 to 18.47), attributing this progress to schema-based instruction. Nevertheless, the study’s focus on a single preposition and the absence of delayed post-testing limits its generalizability and ability to assess long-term learning retention.

In a similar vein, Al Emam (2020) explored the acquisition of *for* and *to* by Arabic-speaking ESL learners through a quasi-experimental design involving 16 participants. The participants were randomly assigned to two instructional groups: one received schema-based instruction grounded in Cognitive Linguistics, incorporating visual aids and conceptual metaphors; the other followed traditional rule-based methods involving translation and rote memorization. Performance was assessed through pre- and post-instruction

tests designed to measure learners' accuracy in selecting and using the target prepositions. The results revealed that the schema-based group achieved a 32.69% improvement, compared to 15.19% in the traditional group. Crucially, the difference in posttest performance was found to be statistically significant, as confirmed by the Mann-Whitney U test ($p < .05$). These findings underscore the potential of Cognitive Linguistics to promote deeper, more accurate prepositional usage, though the small sample size and brief intervention duration limit the generalizability of the results.

Shintani, Mori, and Ohmori (2016) conducted a large-scale investigation with over 400 Japanese undergraduates to examine image schema-based instruction in English grammar more broadly. Their results demonstrated significant improvements in learners' conceptual grasp of spatial grammar elements, affirming the cognitive advantages of schematic visualization. However, because the study addressed a wide range of grammar items—not solely prepositions—and revealed limitations in teaching certain areas (e.g., the definite article), the specific efficacy of schema-based instruction for prepositions remains somewhat diluted.

Wijaya and Ong (2018) offer a particularly valuable contribution by directly comparing Cognitive Linguistics (CL)-based instruction with rule-based instruction in teaching the prepositions *in*, *on*, and *at* to Indonesian adolescent learners. Employing a quasi-experimental design with pre-, post-, and delayed post-tests, their findings showed that while the CL group significantly outperformed the rule-based group in immediate learning, the difference narrowed in delayed testing. This calls into question the long-term durability of schema-based instruction and highlights the need for extended and repeated exposure, a factor integrated into the present study's six-week design.

Zarei, Darakeh, and Daneshkhah (2016) adopted a novel approach by integrating Dynamic Systems Theory (DST) with Cognitive Linguistics to explore not only the learning of English prepositions but also the development of learner autonomy. Their study, conducted with 60 Iranian EFL learners, found that DST/CL-based instruction significantly enhanced learners' post-test scores compared to conventional methods. However, no significant gains were observed in learner autonomy, raising important questions about the broader cognitive and affective implications of schema-based learning.

What sets the current study apart is its exclusive focus on Kurdish university-level EFL students—a group previously underrepresented in the literature—and its comprehensive treatment of six high-frequency English prepositions over a six-week period in an actual classroom setting. Unlike prior studies, which often rely on brief interventions, isolated lexical items, or small-scale trials, this research integrates schema-based instruction into an authentic instructional context while evaluating both comprehension and retention outcomes through pretests and posttests. Additionally, it responds to prior calls for more culturally relevant, ecologically valid applications of Cognitive Linguistics by grounding its design in the real linguistic challenges of Kurdish learners.

Taken together, these previous studies demonstrate the pedagogical potential of schema-based instruction but also highlight several limitations, including short intervention periods, narrow prepositional focus, and underexplored learner populations. The current study builds upon this foundation by offering a more comprehensive and contextually sensitive investigation of Image Schema Theory in EFL instruction.

3. Methodology

3.1 Research Design

A quasi-experimental research design was employed (Creswell, 2014; Dörnyei, 2007) using pretest–posttest measures for both the experimental and control groups. This design was selected due to its practicality and alignment with the real-world classroom context, where random assignment of participants was not feasible. Quasi-experimental designs are widely recognized as appropriate and effective in natural educational settings where full experimental control is often unattainable (Creswell & Creswell, 2018). This

approach enabled the researcher to examine the potential influence of Image Schema Theory (IST) instruction on Kurdish EFL learners' comprehension and retention of English prepositions.

3.2 Context and Participants

The study was conducted at Komar University of Science and Technology, specifically at the Center of Intensive English Programs. Participants consisted of 100 Foundation 1 university-level Kurdish EFL students enrolled in the program. Two intact classes were selected: one designated as the experimental group and the other as the control group, with 50 students in each. Participants were not randomly assigned; instead, existing classroom groups were preserved to maintain a naturalistic learning environment.

All participants shared a comparable level of English proficiency, as determined by the Oxford Online Placement Test (OOPT), a standardized digital assessment developed by Oxford University Press. The OOPT evaluates core language competencies, primarily grammar, vocabulary, and listening comprehension, and aligns results with CEFR levels. Based on their OOPT scores, all students were placed within the A2–B1 range, indicating lower-intermediate proficiency.

Demographically, the participants ranged in age from 18 to 22 years, with a relatively balanced gender distribution. Most had received between 6 and 8 years of formal English instruction through the national curriculum, with limited exposure to English outside the classroom context.

The Center of Intensive English Programs at Komar University offers a foundational English curriculum designed to prepare first-year students for undergraduate study in English-medium academic programs. It targets EFL learners who require additional language support before transitioning into their departments. The program includes integrated instruction in reading, writing, speaking, listening, and grammar, with an emphasis on academic vocabulary and communicative competence.

3.3 Instructional Intervention

This study focused on six frequently occurring and pedagogically challenging English prepositions: *on*, *in*, *at*, *over*, *of*, and *about*. These prepositions were selected based on three primary criteria: corpus-validated frequency, semantic complexity, and instructional relevance. Data from the British National Corpus (BNC), as reported by Leech, Rayson, and Wilson (2001), indicate that these prepositions rank among the most frequently used in English, with the following frequencies: *of* (29,391), *in* (18,214), *on* (6,475), *at* (4,790), *about* (1,524), and *over* (735). This quantitative evidence highlights their foundational role in both written and spoken discourse.

Despite their ubiquity, these prepositions are notoriously difficult for EFL learners due to their polysemous, context-sensitive, and often abstract usage (Celce-Murcia & Larsen-Freeman, 1999; Tyler & Evans, 2003). Their meanings are not easily captured through translation or rote memorization, making them ideal candidates for cognitive, concept-based instruction. Each preposition was therefore intentionally paired with a corresponding image schema to reflect embodied spatial experience and provide learners with conceptual grounding for abstract usage patterns. Specifically: *in* was taught using the CONTAINMENT schema, *on* with SUPPORT, *at* with LOCATION/POINT, *over* with TRAJECTORY, *of* with PART–WHOLE, and *about* with the CIRCULAR PATH schema.

The teaching period lasted for six weeks, with two hours of instruction per week. The experimental group received instruction grounded in Image Schema Theory (IST). Instruction incorporated visual representations, schema-based diagrams, contextualized example sentences, and embodied classroom activities. Learners physically manipulated objects, used gestures to represent spatial relations, analyzed image-schema diagrams, and completed perception-based tasks linking language to sensory-motor experiences. Kurdish translations were selectively incorporated to reinforce conceptual clarity while avoiding dependence on rote memorization.

In contrast, the control group received traditional form-focused instruction that emphasized grammatical correctness and rule-based learning. Instruction relied on translation-based explanations, grammar rules, decontextualized examples, and mechanical drills. Prepositions were introduced and practiced in isolated sentence structures with minimal reference to conceptual meaning or real-world usage. Activities included fill-in-the-blank tasks, error correction, and textbook-based exercises.

To ensure content consistency, both groups used the same coursebook. However, the instructional methodologies diverged significantly: the experimental group experienced cognitively enriched, schema-based learning focused on meaning and conceptual understanding, while the control group followed conventional pedagogy rooted in accuracy and structural form. This pedagogical distinction allowed the study to rigorously test the efficacy of schema-based instruction against traditional methods in addressing the persistent difficulties learners face with prepositional use.

3.4 Test Instruments

Pre-tests and post-tests were used to evaluate participants' comprehension and retention of the six target English prepositions: *in*, *on*, *at*, *over*, *of*, and *about*. These parallel-format assessments allowed for a consistent comparison of learner performance before and after instruction, thus enabling a clear measure of the instructional intervention's effectiveness.

Each test included five integrated sections, comprising a total of 38 items. The multiple-choice section contained 8 items that assessed learners' recognition of correct prepositional usage within context. The fill-in-the-blank section featured 12 items that required students to accurately insert prepositions into appropriate syntactic slots. In addition, a true/false section with 6 items tested learners' ability to identify and correct incorrect usage. Another 6 items were dedicated to sentence construction tasks, which elicited productive language use through meaningful sentence creation using the target prepositions. Finally, the picture-based completion section, also comprising 6 items, required learners to interpret visual-spatial relationships and express them through appropriate prepositional usage—an approach that closely aligns with the cognitive-linguistic emphasis on embodied meaning and perceptual grounding.

The test was partially adapted from established resources including Lindstromberg (2010), Bruckfield (2012a, 2012b), Tyler (2012), Bouchenek (2017), and Song (2013), as well as from reputable online educational platforms such as *Englisch-Hilfen.de*, *Grammar Bank*, and *EnglishGrammar.org*. Additional items were developed by the researcher to tailor the assessment more precisely to the aims and structure of the intervention.

Both the pre-test and post-test followed an identical format to ensure reliable comparison of learning outcomes. A time limit of 35 minutes was assigned to each test, which was deemed appropriate based on the item types and overall test length. A sample version of the test is included in Appendix 1 to illustrate the design and structure of the instrument.

3.5 Pilot Study of the Instruments

A pilot study was conducted to determine the clarity, reliability, and functionality of the test items, before the official administration of the pre-test and post-test instruments. Seven students were randomly selected from each the experimental and control groups. These students were excluded from the main study to avoid possible potential bias arising from prior exposure to the test items. The pilot tests were analyzed using IBM SPSS Statistics Version 27, internal consistency was measured with Cronbach's Alpha which resulted in an excellent coefficient of 0.936. This indicated high internal consistency and the effectiveness of the test items in measuring learners' understanding and retention of the English prepositions.

Table 1 Reliability Statistics of the Pilot Study

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.936	0.937	38

3.6 Validity and Reliability

To ensure accuracy and consistency of the study tools, both validity and reliability were carefully established. Validity refers to the extent to which a test measures what it is supposed to measure, and reliability refers to how consistent are these measurements (Ary et al., 2010; Hughes, 2003).

Face and content validity were confirmed through expert review: a panel of linguists and applied linguistics professors evaluated the pre/post-test items. The tests included multiple-choice items, fill-in-the-blank questions, true/false statements, sentence-construction tasks, and a picture-based exercise, all designed to target learners' understanding and usage of six English prepositions. Their feedback led to revisions that ensured the instruments were relevant, clear, and representative of the targeted constructs.

Reliability was assessed via Cronbach's Alpha to measure internal consistency. All test phases yielded acceptable to good reliability values, as shown below:

Table 2 Cronbach's Alpha Reliability Measures

Test Phase	Cronbach's Alpha	N of Items
Pre-test (Experimental)	0.702	38
Post-test (Experimental)	0.796	38
Pre-test (Control)	0.708	38
Post-test (Control)	0.783	38

The Cronbach's Alpha dropped from 0.936 in the pilot to 0.702 in the main pre-test. This variation is not uncommon and can be attributed to differences in sample size, participant variability, and testing conditions. The pilot group was small and potentially more homogenous, which may have produced higher internal consistency. The main study, conducted under broader classroom conditions with a larger and more diverse sample, yielded a slightly lower, but still acceptable, reliability coefficient.

In addition to internal consistency, inter-rater reliability was assessed for the subjective items, particularly the sentence-construction tasks. Three independent raters evaluated student responses using a shared scoring rubric focused on correct preposition use, grammatical structure, and clarity of expression. The close alignment of mean ranks across raters in all test conditions, as shown in Table 3, demonstrates a high level of scoring consistency. To statistically confirm agreement among raters, a Kruskal–Wallis H test was conducted. The results are presented in Table 4, which show no significant differences among the raters' scores across conditions ($p > .05$), affirming the objectivity and consistency of the scoring process. These procedures align with established best practices in inter-rater reliability assessment (Gwet, 2014).

Table 3 Mean Ranks of Raters Across Test Conditions

Test Condition	Rater 1	Rater 2	Rater 3
Pre-test (Experimental)	77.82	72.79	75.89
Post-test (Experimental)	78.79	74.46	73.25
Pre-test (Control)	76.61	74.96	74.93
Post-test (Control)	77.91	73.78	74.81

Note: Scores represent mean ranks based on Kruskal–Wallis test analysis.

Table 4 Kruskal–Wallis H Test Results for Inter-Rater Reliability

Test Condition	Kruskal–Wallis H	df	Asymp. Sig. (p)	Grouping Variable
Pre-test (Experimental)	0.351	2	0.839	Rater
Post-test (Experimental)	0.477	2	0.788	Rater
Pre-test (Control)	0.051	2	0.975	Rater
Post-test (Control)	0.261	2	0.878	Rater

Note: All p-values >0.05, showing no significant differences between raters in any test condition.

3.7 Data Collection and Analysis Procedures

The study followed a structured timeline. Pretest was administered to both groups, in the first week of the study. Subsequently, the experimental group was instructed using schema-based instruction while the control group was instructed using traditional methods over the following six weeks. Following the instructional period, a posttest identical in structure to the pretest was administered by the researcher to both groups to assess gains in comprehension and retention. Throughout the process, ethical considerations were observed: participants were informed about the process and purpose of the study, and consent was obtained. Confidentiality and privacy were maintained in data handling and reporting. The quantitative data collected from the pre-test and post-test were analyzed using IBM SPSS (Version 27). Descriptive statistics, including means and standard deviations, were used to summarize learners' performance in each group. To determine whether there were statistically significant differences between the experimental and control groups before and after instruction, an independent samples t-test was employed for both the pre-test and post-test scores. This allowed for comparison of group means to evaluate the effectiveness of the schema-based instructional intervention. Statistical significance was set at the 0.05 level. Visual representations such as bar charts and percentage gain calculations were also used to highlight the comparative performance and learning gains between the two groups.

4. Results and Discussion

4.1 Descriptive Statistics

Pre-test Results

Before implementing the instructional intervention, a pre-test was administered to both the experimental and control groups to check their prior knowledge of English prepositions. Descriptive statistics for the pre-test scores are presented in Table 5.

Table 5 Pre-test Descriptive Statistics

Group	N	Mean Score	Std. Deviation
Experimental	50	17.00	4.99
Control	50	18.30	4.89

As shown in Table 5, the experimental group (N = 50) recorded a mean score of 17.00 with a standard deviation of 4.99, while the control group (N = 50) achieved a slightly higher mean score of 18.30 with a standard deviation of 4.89. These results show that both groups exhibited comparable levels of performance prior to the instructional period. The slight difference in mean scores is minimal and does not reflect any substantial variation in pre-existing knowledge. This establishes a statistically and pedagogically valid starting point for evaluating the impact of the respective instructional methods applied to each group during the intervention phase.

Post-test Results

A post-test was administered to both the experimental and control groups, after the six-week instructional period. This test was identical in format to the pre-test and intended to capture any potential differences in learners' comprehension and retention of English prepositions as a result of the instructional treatment. The descriptive statistics for the post-test scores are shown in Table 6.

Table 6 Post-test Descriptive Statistics

Group	N	Mean Score	Std. Deviation
Experimental	50	25.32	5.71
Control	50	21.18	4.62

As indicated in Table 6, the experimental group (N = 50) demonstrated a marked improvement, achieving a mean score of 25.32 with a standard deviation of 5.71. In contrast, the control group (N = 50) recorded a more modest mean score of 21.18 with a standard deviation of 4.62. While both groups showed gains following instruction, a Mann–Whitney U test was conducted to determine whether the difference in post-test scores was statistically significant. The results revealed a U value of 724.000, with a Z score of -3.634 and a p-value of .000 ($p < .001$), indicating that the improvement in the experimental group was significantly greater than that of the control group. This statistically significant difference highlights the effectiveness of schema-based instruction in enhancing learners' comprehension and retention of English prepositions.

To visually support these statistical findings, Figures 1–4 present histograms of score distributions for both groups before and after instruction. The experimental group's posttest scores (see Figure 2) show a notable shift toward higher performance compared to their pretest scores (see Figure 1). In contrast, the control group's posttest distribution (see Figure 4) indicates only moderate improvement over the pretest baseline (see Figure 3), underscoring the relative effectiveness of schema-based instruction.

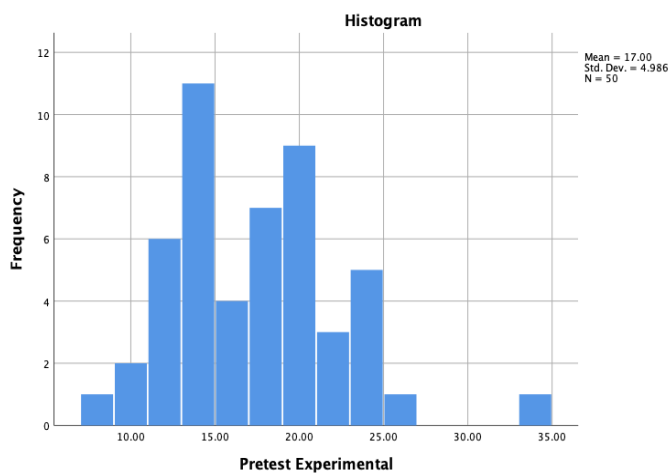


Figure 1 Pretest Score Distribution – Experimental Group

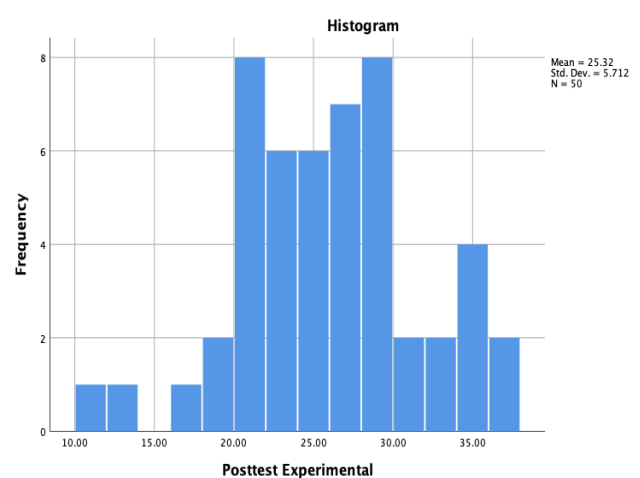


Figure 2 Posttest Score Distribution – Experimental Group

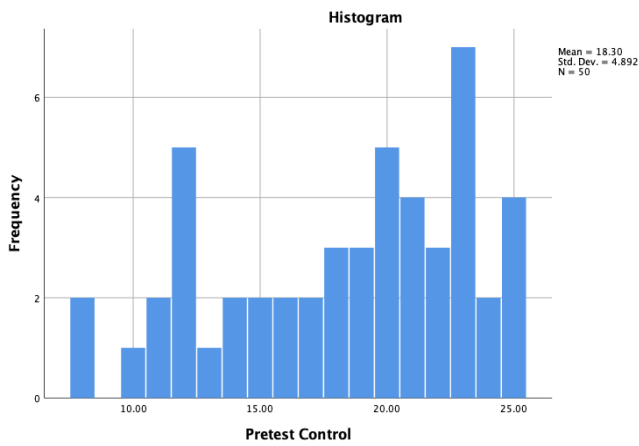


Figure 3 Pretest Score Distribution – Control Group

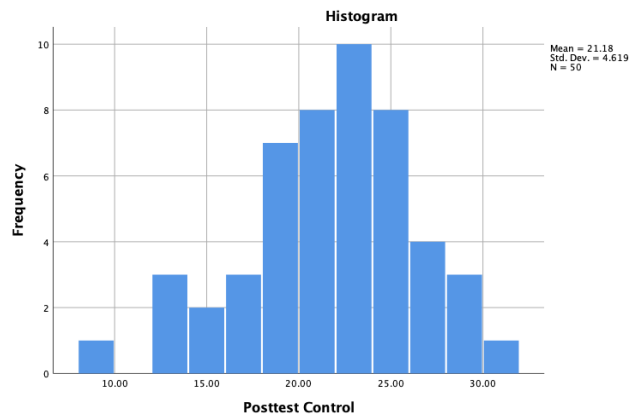


Figure 4 Posttest Score Distribution – Control Group

4.2 Inferential Statistics

To evaluate the learning gains within each group, a Mann–Whitney U test was used to compare the pre-test and post-test scores separately for the experimental and control groups. This analysis helps determine whether the instructional period led to statistically significant improvements in learners' understanding of English prepositions.

To start with the experimental group, the results showed a substantial increase in performance after receiving Image Schema Theory-based instruction. The mean rank for the pre-test was 31.97, while for the post-test it rose to 69.03. The Mann–Whitney U value was 323.500, with a Z-value of -6.396 and a p-value of .000 ($p < .001$), indicating a highly significant improvement.

Table 7 Mann–Whitney U Test Results – Experimental Group

Group	N	Mean Rank	Sum of Ranks
Pre-test	50	31.97	1598.50
Post-test	50	69.03	3451.50

Test Statistic	Value
Mann–Whitney U	323.500
Wilcoxon W	1598.500
Z	-6.396
Asymp. Sig. (2-tailed)	.000

As for the control group, which received traditional instruction, the results also showed improvement, but to a lesser degree. The mean rank increased from 42.59 (pre-test) to 58.41 (post-test). The Mann–Whitney U value was 854.500, with a Z-value of -2.733 and a p-value of .006 ($p < .05$), reflecting a statistically significant but more modest improvement.

Table 8 Mann–Whitney U Test Results – Control Group

Group	N	Mean Rank	Sum of Ranks
Pre-test	50	42.59	2129.50
Post-test	50	58.41	2920.50

Test Statistic	Value
Mann–Whitney U	854.500
Wilcoxon W	2129.500

Z	-2.733
Asymp. Sig. (2-tailed)	.006

To determine whether the post-test performance of the experimental group significantly differed from that of the control group, a Mann–Whitney U test was conducted. This comparison directly evaluates the relative effectiveness of Image Schema Theory versus traditional instruction in enhancing learners' understanding of English prepositions. The results indicate a substantial difference in favor of the experimental group. The experimental group achieved a mean rank of 66.35, while the control group recorded a mean rank of 34.65. As presented in Table 9, the Mann–Whitney U value was 563.500, with a Z-value of -5.362 and a p-value of .000 ($p < .001$), indicating a statistically significant difference in favor of the experimental group.

These findings suggest that the instructional approach grounded in Image Schema Theory had a considerably stronger impact on learner performance than the traditional teaching method. The high level of statistical significance reinforces the instructional value of schema-based teaching strategies in the EFL classroom.

Table 9 Mann–Whitney U Test Results – Post-test Comparison Between Groups

Group	N	Mean Rank	Sum of Ranks
Experimental	50	66.35	3317.50
Control	50	34.65	1732.50

Test Statistic	Value
Mann–Whitney U	563.500
Wilcoxon W	1732.500
Z	-5.362
Asymp. Sig. (2-tailed)	.000

4.3 Discussion of Results

4.3.1 Research Question 1: Impact of Image Schema Theory (IST)

The first research question explored the extent to which Image Schema Theory (IST) enhances Kurdish EFL learners' comprehension and retention of English prepositions. The quantitative findings revealed that students taught through IST achieved significantly higher post-test scores than their counterparts in the control group, demonstrating a strong positive effect of the cognitive-linguistic approach. These results are not only statistically significant but pedagogically meaningful, reflecting a deepened conceptual understanding of spatial and abstract relationships that prepositions convey.

This improvement can be attributed to the nature of image schemas themselves—recurring, dynamic patterns of embodied experience (Johnson, 1987) that learners internalize and use to make sense of linguistic expressions. For instance, during Week 1, the experimental group was introduced to the preposition “in” through the CONTAINMENT schema, supported by diagrams showing objects inside boxes



and learners physically acting out containment scenarios (see Figure 5). This multimodal reinforcement allowed students to map concrete spatial experiences onto abstract grammatical functions, enhancing comprehension and retention. Later, students were introduced to abstract uses of the CONTAINMENT

schema, such as "in love," conceptualizing emotional or situational states as containers (see Figure 6). Similar positive findings were reported by Aajami (2019), who also focused on the CONTAINMENT schema for "in" among Iraqi EFL learners and observed significant comprehension gains through schema-based methods. However, unlike Aajami's narrower focus on a single preposition, this study expanded schema-based instruction to multiple prepositions, including abstract extensions.

Figure 5 Containment schema: "in the box"



Figure 6 Containment schema: "in love"

When teaching "on" through the SUPPORT schema, visual aids illustrating objects resting atop horizontal surfaces, such as a laptop on a table (see Figure 7), were complemented by interactive classroom tasks that facilitated deeper understanding. Learners labeled scenes and created their own examples, reinforcing mental associations through active engagement. This aligns with Shintani, Mori, and Ohmori's (2016) findings, which highlighted that schematic visualization significantly enhances the conceptual grasp of spatial grammar elements among Japanese learners. However, while Shintani et al. targeted broader grammatical items, this study specifically validated their conclusions in the context of English prepositions.

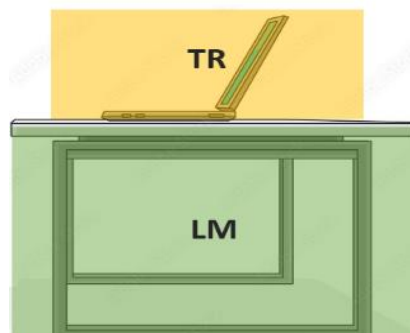


Figure 7 Support schema: "On the Table"

The teaching of "over" using the TRAJECTORY schema provided learners with visual and embodied experiences, enabling them to conceptualize "over" flexibly and accurately. Learners engaged with central schema diagrams (see Figure 8) and practical, illustrative examples, such as a dog jumping over a fence, which embodied the trajectory dimension (see Figure 9). Students generated similar expressions through speech, drawing, or gestures, promoting internalization of the cognitive structure of the preposition. This method resonates with Al Emam's (2020) research, which demonstrated significant improvements among learners exposed to visual and conceptual metaphors compared to traditional rule-based instruction. Al Emam's positive outcomes support the pedagogical validity of schema-based interventions in different linguistic contexts, similar to the Kurdish EFL context of this study.

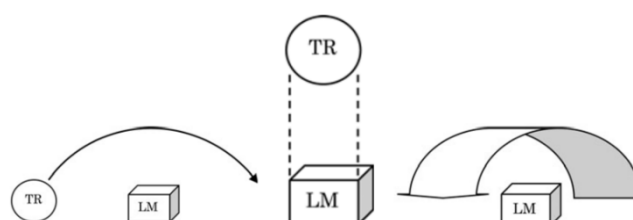


Figure 8 Central schema of "over"



Figure 9 Trajectory schema: “The dog jumped over the fence.”

Overall, the findings substantiate that IST not only facilitates immediate improvement but also promotes meaningful, conceptually grounded learning, supporting previous research by providing empirical validation within a novel linguistic and educational context. In summary, the quantitative results clearly demonstrate the effectiveness of schema-based instruction over traditional methods, supporting cognitive linguistic approaches as pedagogically beneficial for teaching English prepositions.

4.3.2 Research Question 2: Comparison Between IST and Traditional Methods

The second research question examined how instruction based on Image Schema Theory (IST) compared with traditional grammar-based methods in improving learners’ understanding of English prepositions. The results revealed a substantial and statistically significant advantage in favor of the IST-based group. Although both groups demonstrated measurable improvement, the depth, consistency, and flexibility of learning among the experimental group indicated a deeper conceptual transformation.

Quantitatively, the Mann–Whitney U test result ($p = .000$) confirmed a statistically significant advantage for the IST-based group ($p < .001$). The experimental group’s scores rose from $M = 17.00$ to $M = 25.32$, whereas the control group improved less significantly ($M = 18.30$ to $M = 21.18$). These mean score changes are visually summarized in the bar chart presented in Figure 10, clearly highlighting the considerable improvement achieved by the experimental group compared to the more modest gains of the control group. These findings closely mirror those of Wijaya and Ong (2018), who reported superior immediate learning outcomes in schema-based instruction compared to traditional methods among Indonesian learners. However, Wijaya and Ong observed diminished differences in delayed post-tests, suggesting that extended exposure is crucial for durable schema-based learning—this insight aligns with the six-week intervention period adopted in the current study.

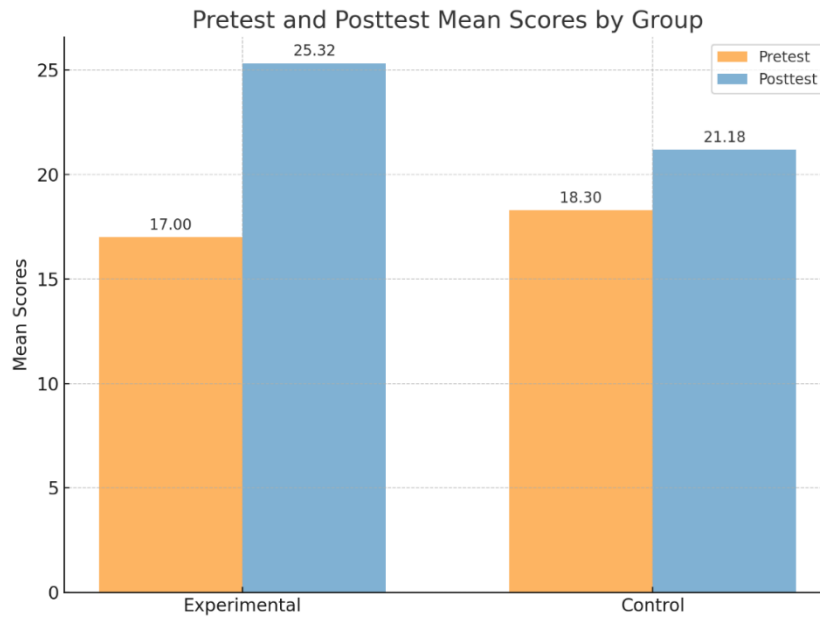


Figure 10. Pretest and Posttest Mean Scores by Group

The experimental group's successful use of prepositions such as "about" through the CIRCULAR PATH schema in metaphorical contexts further highlights the instructional impact. Students engaged with examples such as "She tiptoed about the room" (see Figure 11) and "He is about his father's height" (see Figure 12), accompanied by diagrammatic representations illustrating circular motion and approximate spatial dimensions. Learners generalized usage creatively and accurately in metaphorical expressions like "We talked about the movie" and "The book is about courage," reflecting a conceptual rather than rote understanding. This result is supported by Zarei, Darakeh, and Daneshkhah's (2016) study, which also found significant cognitive benefits from schema-based instruction. However, unlike Zarei et al.'s integration with Dynamic Systems Theory and their additional focus on learner autonomy, the current study primarily emphasized cognitive and conceptual understanding, providing robust empirical support for IST's pedagogical effectiveness.

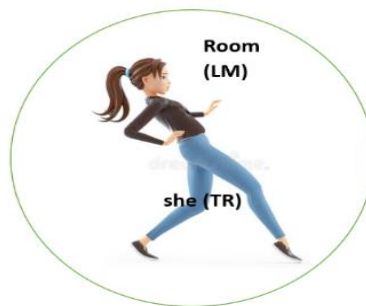


Figure 11 Circular Path Schema: "She tiptoed about the room."



Figures 12 Vertical Approximation Schema: "He is about his father's height."

In summary, this study's results reinforce and extend previous findings by demonstrating clear advantages of schema-based instruction over traditional methods, confirming cognitive linguistics' effectiveness across different learner populations and instructional contexts. By explicitly integrating comparisons with prior research, the present study strengthens empirical support for Image Schema Theory, contributing to a more comprehensive understanding of its pedagogical value.

4.3.3 Implications of the Study

The study's findings carry several important implications for EFL pedagogy, especially in situations where learners find it difficult to understand the abstract and polysemous nature of English prepositions. Given the obvious benefit shown by students taught using Image Schema Theory (IST), cognitive linguistic approaches ought to be taken into consideration as a key element of grammar instruction in foreign language classrooms where conventional methods are inadequate.

First, the need for more conceptually grounded teaching methods is indicated by the effectiveness of schema-based instruction in improving comprehension and retention. To help students internalize prepositional meanings, teachers should use embodied representations, such as image schemas depicted through diagrams, gestures, and spatial metaphors, in addition to decontextualized grammar rules and rote exercises. This change in instructional design has the potential to make grammar more approachable, particularly for learners who might not respond well to conventional rule-based methods.

Second, the research shows that image schemas are effective for both more abstract and metaphorical prepositional usages as well as literal spatial meanings. This is particularly relevant in advanced EFL contexts, where students are expected to use prepositions flexibly and accurately in a variety of communicative contexts, such as academic writing and spoken discourse. IST provides a cognitive basis for abstraction, which traditional methods frequently fail to develop.

Third, the findings highlight the value of using multimodal and interactive strategies in grammar teaching. The strong performance of the experimental group — supported by consistent statistical gains and learner feedback — suggests that engaging multiple channels of input (visual, kinesthetic, and conceptual) leads to more durable learning. EFL programs and teacher training curricula should consider integrating such practices into their core frameworks.

These findings not only validate the effectiveness of Image Schema Theory in EFL preposition instruction but also resonate with broader cognitive linguistic approaches in the literature. While Boers (2011) and Tyler (2012) do not explicitly use the term Image Schema Theory, their research aligns with its core principles. Boers (2011) underscores the pedagogical value of cognitive-semantic techniques—visualization and metaphor-based instruction—that promote deeper conceptual understanding, much like image schema-based approaches. Likewise, Tyler (2012) illustrates how cognitive linguistic frameworks facilitate learner comprehension of abstract grammar, particularly prepositions, by grounding meaning in experiential and usage-based contexts. Together, their findings support a pedagogical shift toward meaning-based, embodied instruction that complements and validates the principles of Image Schema Theory.

Finally, this study adds to the growing body of evidence that cognitive linguistic instruction is adaptable to diverse linguistic and cultural contexts. The successful implementation of schema-based methods with Kurdish learners supports the cross-linguistic applicability of IST and opens avenues for further research in similar multilingual environments.

5. Conclusion and Recommendations

This study investigated the effectiveness of Image Schema Theory (IST) in teaching English prepositions to Kurdish EFL learners. Drawing on a controlled experimental design and quantitative analyses, the results showed that schema-based instruction greatly outperformed traditional grammar-based methods in

promoting precise and conceptually grounded use of prepositions. Stronger post-test improvements, improved retention, and more adaptable use of prepositions in literal and abstract contexts were all displayed by the experimental group. These findings highlight the powerful role that embodied cognitive structures, such as CONTAINMENT, SUPPORT, and TRAJECTORY schemas, play in helping learners comprehend and make meaningful use of relational language.

The results of this study support the expanding body of knowledge in cognitive linguistics that conceptual and experiential grounding, rather than decontextualized rules, is the most effective way to teach grammar. Learners in the schema-based condition were creating meaning, rather than just memorizing prepositions, through dynamic visuals, physical interaction, and real-world associations. This method was not only effective for immediate learning outcomes, but it also promoted deeper conceptual awareness and learner autonomy, as evidenced by their performance.

Several pedagogical and research implications arise from these findings. Curriculum designers should consider incorporating cognitive linguistic frameworks—particularly image schemas—into grammar instruction, especially for notoriously challenging elements like prepositions. Teachers are encouraged to adopt multimodal, schema-informed strategies that encourage learners' visual and kinesthetic thinking. Such methods have shown to enhance understanding, engagement, and long-term memory. Furthermore, incorporating fundamental ideas from cognitive linguistics and schema theory into teacher preparation programs would help teachers put these realizations into practice in the classroom.

Building on this foundation, future studies should investigate how IST can be applied to other grammatical areas, like phrasal verbs, conjunctions, or idiomatic expressions. Additional future research might also investigate the long-term effects of schema-based instruction, its effectiveness with younger students or lower proficiency levels, and its cross-linguistic adaptability in multilingual classrooms. This allows researchers to further test and improve the potential of image schemas as powerful teaching tools for second language instruction. Ultimately, this study shows that grammar instruction can be rethought through the rich and pedagogically useful lens provided by cognitive linguistics, and Image Schema Theory in particular.

References:

1. Aajami, M. K. H., 2019. *A cognitive linguistic study of the English preposition in. International Journal of Research in Social Sciences and Humanities*, 9(3), pp.103–116.
2. Al Emam, L., 2020. *Applying cognitive linguistics: Preposition acquisition in an ESL context with Arabic learners. Umeå University Publications*.
3. Ansari, N. A., 2019. *Role and importance of schemas in pedagogy and learning: A cognitive approach. Journal of Communication and Cultural Trends*, 1(1), pp.45–60.
4. Ary, D., Jacobs, L. C., Sorensen, C. K., & Walker, D. A., 2010. *Introduction to research in education* (8th ed.). Wadsworth Cengage Learning.
5. Boers, F., 2011. *Cognitive semantic ways of teaching figurative phrases: An assessment. Review of Cognitive Linguistics*, 9(1), pp.227–261. <https://doi.org/10.1075/rcl.9.1.10boe>
6. Catalan, R. M. J., 1996. *Frequency and variability in errors in the use of English prepositions. Miscelánea: A Journal of English and American Studies*, 17, pp.171–188.
7. Celce-Murcia, M., & Larsen-Freeman, D., 1999. *The grammar book: An ESL/EFL teacher's course* (2nd ed.). Heinle & Heinle.
8. Croft, W., & Cruse, D. A., 2004. *Cognitive linguistics*. Cambridge University Press.
9. Creswell, J. W., 2014. *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
10. Dörnyei, Z., 2007. *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford University Press.
11. Evans, V., 2019. *Cognitive linguistics: A complete guide*. Edinburgh University Press.
12. Fujii, K., 2016. Effects of learners' English proficiency level in learning English prepositions through the schema-based instruction. Retrieved from <https://web.archive.org/web/20170922050113/http://www.ccsenet.org/journal/index.php/elt/article/viewFile/63049/33824>
13. Gwet, K. L., 2014. *Handbook of inter-rater reliability: The definitive guide to measuring the extent of agreement among raters* (4th ed.). Advanced Analytics, LLC.
14. Hampe, B., Ed., 2005. *From perception to meaning: Image schemas in cognitive linguistics*. Mouton de Gruyter.
15. Hughes, A., 2003. *Testing for language teachers* (2nd ed.). Cambridge University Press.
16. Johnson, M., 1987. *The body in the mind: The bodily basis of meaning, imagination, and reason*. University of Chicago Press.
17. Johnson, M. H., 2015. Embodied understanding. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00875>

18. Koffi, E., 2010. *Applied English syntax: Foundations for word, phrase, and sentence analysis*. Kendall Hunt Publishing Company.
19. Lakoff, G., 1987. *Women, fire, and dangerous things: What categories reveal about the mind*. University of Chicago Press.
20. Lakoff, G., & Johnson, M., 1980. *Metaphors we live by*. University of Chicago Press.
21. Langacker, R. W., 1987. *Foundations of cognitive grammar: Theoretical prerequisites* (Vol. 1). Stanford University Press.
22. Lam, Y., 2009. Applying cognitive linguistics to teaching the Spanish prepositions *por* and *para*. *Language Awareness*, 18(1), pp.2–18. <https://doi.org/10.1080/09658410802147345>
23. Littlemore, J., 2009. *Applying cognitive linguistics to second language learning and teaching*. Palgrave Macmillan.
24. Shintani, N., Mori, H., & Ohmori, Y., 2016. Image-schema-based instruction in L2 grammar: A classroom-based study. *Language Teaching Research*, 20(1), pp.69–91. <https://doi.org/10.1177/1362168814541731>
25. Tyler, A., 2012. *Cognitive linguistics and second language learning: Theoretical basics and experimental evidence*. Routledge.
26. Tyler, A., & Evans, V., 2003. *The semantics of English prepositions: Spatial scenes, embodied meaning, and cognition*. Cambridge University Press.
27. Ölçer, A., 2024. *The negative aspect of the grammar-translation method (GTM) in language teaching*. https://www.academia.edu/32375069/The_Negative_Aspect_of_the_Grammar_Translation_Method_GTM_in_Language_Teaching_in_2014
28. Wijaya, D. and Ong, G., 2016. Applying cognitive linguistics to teaching English prepositions in the EFL classroom. *Indonesian Journal of Applied Linguistics*, 7(1), pp.118–137. <https://doi.org/10.17509/ijal.v7i1.6855>
29. Zarei, G. R., Darakeh, M. & Daneshkhah, N., 2016. *Effect of using image-schemas on learning L2 prepositions and enhancing learner autonomy: A dynamic system theory and cognitive linguistics-inspired approach*. *Research in Applied Linguistics*, 7(1), pp.118–137.