

The Impact of Virtual Reality-Based Instruction on Saudi EFL Learners' Perception and Use of English Idioms

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Abstract

This study adopts a mixed-methods approach to investigate the impact of virtual reality (VR)-based instruction on Saudi EFL learners' comprehension and use of English idioms. The main purpose of the study is to explore how VR instruction contributes significantly to the academic performance of Saudi EFL learners in terms of their competence in learning English idioms. The sample constitutes 60 undergraduate EFL majors from a Saudi university distributed to two groups: an experimental group whose members undergo VR-based instruction and a control group that receives traditional instruction. Three instruments are employed in data collection: pre- and post-tests, learner and instructor surveys, and classroom observations. Findings demonstrate significant improvement in idiom recognition and use across both instructional conditions. Although the VR group achieves higher post-test scores than the traditional group, the time × instructional group interaction is not statistically significant, signifying that the degree of improvement over time is analogous across the two groups. Also, learners report moderate levels of engagement and perceived usefulness, while instructors indicate that VR-based lessons are appropriate for implementation in Saudi EFL classrooms. Observation data further suggest that VR-based instruction contributes to contextual inference and reduces reliance on literal translation. Pedagogically, the findings suggest that VR may serve as a useful complementary apparatus for boosting contextualized and experiential idiom learning; however, its advantages over traditional learning should be construed as promising rather than conclusive.

Keywords: virtual reality, idiomatic competence, EFL learners, immersive learning, mixed-methods approach, Saudi EFL context

1. Introduction

Starting from the assumption that idiomatic competence among EFL learners has both lexical and pragmatic weight in augmenting the lexical repertoire and conveys important cultural and pragmatic meanings (Cooper, 1999), their learning should be amalgamated within the learning process as a crucial element of native-like English proficiency (Nadeem & Almowalad, 2022). However, idioms may pose a challenge for Saudi EFL learners whose first language is Arabic, as their meanings are often nonliteral and cannot always be translated directly. Idiomatic phraseology plays an important role in spontaneous English communication, whether formal or informal, and mastery of idioms is closely related to higher levels of fluency and coherence (Miller, 2020). Arabic speakers often rely on literal translation or literal equivalents, which may distort meaning when English idiomatic expressions do not correspond semantically to Arabic (Albarqi, 2026). This challenge is further complicated when idioms are taught through decontextualized memorization, which can make long-term retention difficult (Zuo, 2020). To address these issues, emerging technologies, particularly virtual reality (VR), are increasingly being explored as potential approaches for contextualized language learning. Research suggests that VR environments may support idiomatic and broader language learning by simulating real-life conversations and interactional contexts that can influence learners' motivation, retention, and engagement (Wu et al., 2022). In addition, culturally sensitive instruction supported by immersive technology may help reduce L1–L2 idiomatic challenges and support greater pragmatic sensitivity among Arab learners (Abdulaal & Alenazi, 2023). As such, this paper attempts to examine the pedagogical potential of VR for supporting English idiom learning among Saudi EFL learners.

Although idioms have linguistic and cultural significance in the process of EFL learning, they still form a research gap that is worthy of linguistic investigation, particularly in Saudi EFL classrooms. Idioms are often taught through memorization and decontextualized examples, which can limit learners' ability to understand them accurately and apply them in real-life settings. Previous studies (e.g., Abdulaal & Alenazi, 2023) suggest that Saudi learners encounter difficulty interpreting idiomatic expressions when instruction does not provide sufficient contextualized or experiential exposure. Such deficiency of contextual interaction may hinder the development of idiomatic competence, which entirely influences the communicative competence of learners. This, in turn, accentuates the need to explore instructional tools such as VR, which offers various opportunities and opens new avenues for language practice in EFL settings and beyond (Lee, 2025).

This study, therefore, seeks to investigate the effectiveness of VR as a supporting tool for improving Saudi EFL learners' idiomatic competence, given the limited research in this area. This study compares VR-based idiom instruction with traditional classroom-based

instruction in Saudi EFL classes. Empirical research (e.g., Azizi & Khafaga, 2023; Qiu et al., 2023; Bacca-Acosta et al., 2021) suggests that VR can enhance vocabulary acquisition, motivation, and engagement through realistic interaction and multisensory scaffolding. Located within the rapidly evolving Saudi educational context, the study is relevant to the growing demand for technology-supported pedagogical innovation (Khafaga & Al-Johani, 2024). The study thus highlights the pedagogical potential of VR in supporting idiom learning through experiential and communicative practice.

This study raises three overarching research questions. First, to what extent is VR-based instruction associated with Saudi EFL learners' idiomatic competence compared to traditional learning? Second, what are the learning strategies Saudi EFL learners employ in the interpretation of idiomatic expressions in VR-based versus traditional instruction? Third, do idioms that have Arabic counterparts receive higher accuracy ratings than idioms without Arabic equivalents under both instructional strands? The answer to these research questions encompasses the main objective this study seeks to achieve: to investigate the role of instructional modality (traditional vs. virtual reality) on the use and perception of English idioms by Saudi EFL learners. It also examines the differences in learning outcomes, cognitive engagement, and strategy use between the two instructional domains. As such, this study has three hypotheses:

H1. VR-instructed learners show a moderate level of progress in perceiving and comprehending idioms compared to the traditionally instructed learners.

H2. VR-instructed learners employ more contextually relevant and inferential learning strategies.

H3. Idioms that have a functional or conceptual equivalent in Arabic are anticipated to be easier to comprehend and utilize than idioms that lack an equivalent in Arabic.

The remainder of this study is structured as follows: Section 2 presents the literature review, wherein the paper offers detailed explanations on idiomatic competence in L2 acquisition, challenges encountered by Arabic-Speaking learners, traditional vs. virtual instructional approaches, and the role of virtual reality in language learning. Section 3 demonstrates the theoretical framework of the study, which elaborates the theoretical framework adopted in this study, including three theoretical strands: cross-linguistic transfer, the involvement load hypothesis (ILH), and experiential/embodied learning. Section 4 provides the methodology of the study, including data collection, description, sampling, instruments, validity and reliability, and the analytical procedures. Section 5 presents the results of the study. Section 6 discusses the results obtained from the analysis of the collected data. Section 7 concludes the study and offers its pedagogical implications, limitations, and recommendations for future research.

2. Literature Review

2.1 Idiomatic Competence in L2 Acquisition

Idiomatic competence refers to the ability to understand and appropriately use fixed multiword constructions such as idioms. It is an essential component of communicative fluency in a second language because it links linguistic proficiency to sociocultural knowledge. Idioms as linguistic signs of cultural identity help to capture collective metaphorical frames of concepts that are fundamental to native-like language (Šarić, 2022). Research in cognitive linguistics has shown that idioms are not entirely arbitrary; rather, they often reflect embodied cognition and conceptual metaphor, linking language, thought, and pragmatic meaning (Pérez, 2019). Idiomatic mastery and intercultural communicative competence are tightly related in L2 contexts, as learners are able to extract meanings that are contextually constrained and achieve pragmatic in situational appropriateness in discourse (Ghasemi & Ahmadian, 2023). However, idiomatic competence remains underrepresented in most language curricula, which produces semantically capable but pragmatically unsound learners. Evidence-based results indicate that an idiom teaching based on metaphor awareness and cognitive constructiveness promotes better performance at both levels of retention and, more so, at the contextual level (Fathi et al., 2023). As such, idiomatic competence is perceived not only as an augmentation of vocabulary acquisition but also a principal constituent of communicative competence, as it involves linguistic, cultural, and cognitive dimensions that contribute to L2 proficiency and fluency.

2.2 Challenges Encountered by Arabic-Speaking Learners

Arabic-speaking EFL learners often face persistent challenges in developing idiomatic competence because linguistic, cultural, and cognitive factors can interfere with figurative-language processing. The dominance of negative transfer, where learners apply Arabic syntactic and semantic rules to English, leads to literal interpretations and pragmatic inaccuracies (Aljuraifani & Alanazi, 2025). Research on Saudi, Yemeni, and Jordanian learners attests that the use of literal translation strategies is based on insufficient exposure to the usage of idioms in natural communicative situations (Alkhadem, 2024) and awareness of cross-cultural equivalence (Alkayed, 2023). Learners tend not to regard idioms as whole semantically structured units but take them as compositional phrases, leading to misunderstanding and less pragmatic competence. It is worsened by the pedagogy supporting rote memorization instead of contextualized or communicative education (Yousif et al., 2023). Thus, fossilized errors and mismatches of concepts to idiomatic understanding and application occurring in Arabic-speaking learners represent the lack of cultural mediation and of metaphorical awareness in the classroom teaching.

2.3 Traditional vs. Innovative Instructional Approaches

The conventional teaching of idioms in EFL classes is mostly incidental and fortuitous, with the idioms being taught as lexical fillers and not part of communicative competence. It relies on memorization and overreliance on translation to the detriment of the cognitive and cultural basis of idiomatic meaning. As a result, learners do not gain contextual awareness or pragmatic fluency, which results in a lack of coherence in linguistic competency (Smith, 2021). It has been empirically shown that traditional teaching, which lacks engagement with

the situation, suppresses the ability to memorize and transfer figurative language to real-life conversation (Peixoto et al., 2023; Alkhresheh, 2024). Conversely, the involvement of immersive technologies, including Virtual Reality (VR), allows embedding an experience-based environment and encouraging more sophisticated learning, promotion of semantics, motivation, and memorization (Lee et al., 2024). Such modalities may have significant correlations with traditional teaching methods by providing visual, auditory, and interactive support for learners' understanding and use of idiomatic expressions.

2.4 Role of Virtual Reality in Language Learning

Virtual reality has been shown in some studies to be an innovative learning tool in the field of language learning when it comes to achieving contextual settings for immersion, acquisition, engagement, and memorization of vocabulary. Compared with more static, text-based approaches, VR enables learners to interact with objects and situations in ways that simulate real-world communication, thereby supporting embodied cognition and spatial memory. Studies indicate that vocabulary learning through VR demonstrated excellent outcomes in both short and long-term memories since the participants learn linguistic data through the system of multimodal sensory vision (Tai et al., 2020). The task-based learning, particularly problem-based VR learning, can enhance learners' motivation and contextualized vocabulary teaching by presenting them with real communicative contexts (Chen et al., 2021). Empirical evidence from high-immersion VR research further indicates that spatially anchored interactions strengthen lexical recall through embodied learning mechanisms (Feng & Ng, 2024). Furthermore, the incorporation of cognitive models, including input processing in immersive VR, suggests that long-term vocabulary retention is greatly boosted when developing active attention and negotiating meanings in VR encourages vocabulary and pragmatic learning. Taken together, these findings suggest that immersive VR may be useful for learning a new language through active engagement and driven by immersion, interaction, and negotiating meaning-making in VR.

2.5 Previous and Related Studies

Much previous research has been conducted on the impact of VR-based instruction on EFL learners' perception and use of English idioms, either in general or within the Saudi EFL context. For example, Chen (2016) investigated the impact of a 3D virtual environment for vocabulary and phrase learning among EFL learners. The findings revealed that immersive virtual environments increased learner engagement, contextualized language input, and improved retention of figurative language expressions. The study suggested that VR environments facilitate meaningful language use through experiential learning. Legault et al. (2019) also examined second-language learning in immersive VR settings. Results showed that learners demonstrated higher motivation, greater interaction, and improved communicative competence compared to traditional classroom instruction. The authors concluded that VR creates authentic communicative situations that promote language acquisition. Further, Parmaxi (2023) investigated language learning in social VR environments and revealed that interactive immersion increased learners' willingness to communicate and improved their understanding of language structures, such as metaphors and idioms. Cooper (1999) also conducted a study on idiom comprehension by ESL learners and demonstrated that the provision of context helped improve comprehension of idioms, which can be considered evidence of the efficiency of idiom learning in immersive VR. In the same vein, Liontas (2017) explored the learning of figurative language in second language contexts and discovered that context-based authentic experience facilitates idiom comprehension.

Within the Saudi EFL context, Alhaysony (2017) examined the difficulties Saudi university students encounter when learning English idioms and revealed that students struggled with figurative meanings and relied heavily on translation strategies. Alhaysony's (2017) study highlighted that both cultural differences and lack of contextual exposure were identified as major obstacles in the process of learning idioms in EFL contexts. Similarly, Nadeem and Almolwad (2022) investigated the challenges and strategies employed by Saudi undergraduate EFL students in learning English idioms. Their findings indicated that idioms were viewed as essential for fluency, but learners faced difficulties due to cultural differences, limited exposure, and insufficient classroom instruction. Moreb (2022) also examined Saudi EFL learners' comprehension of English phrasal idioms under contextualized and decontextualized conditions and demonstrated that contextual support significantly enhances idiom recognition and interpretation, emphasizing the role of authentic learning environments. In the same vein, Jamshed et al. (2024) explored Saudi EFL learners' perceptions and understanding of English idioms and found that students recognized the importance of idioms for communicative competence but reported insufficient instructional support and frequent dependence on Arabic translations. Furthermore, Alqahtani (2025) investigated how Saudi EFL learners process English idioms and the strategies they employ. The study found that learners recurrently depend on L1 transfer and contextual guessing, while higher proficiency students use more sophisticated comprehension strategies.

According to previous literature, it can be stated that contextualization and interactivity of the method applied during the idiomatic knowledge acquisition and use process are important for the EFL students. The analysis of the studies dealing with the application of immersive and social virtual reality revealed that this technology could be used to increase learners' engagement, motivation, and immersion into the linguistic context. In the same vein, it should be mentioned that this data should be taken critically, as it does not prove the effectiveness of the technology for idiomatic learning. Furthermore, existing Saudi studies have primarily focused on idiom comprehension difficulties, learning strategies, and translation-based approaches, whereas VR studies have concentrated on vocabulary acquisition, motivation, and communicative competence. In the same way, although there were many studies conducted in the Saudi EFL setting with regard to cultural differences, lack of exposure, improper instructions, and translation into Arabic as the barriers to idiomatic learning, none of the works has provided evidence regarding the possibility of eliminating these barriers using VR. This indicates the research gap concerning the effectiveness of VR-based instruction compared to the traditional ones when teaching idioms to Saudi EFL majors. The current study seeks to bridge this gap by testing VR-based and traditional instruction methods. Despite the growing interest in

virtual reality for language education and increasing research on idiom acquisition among EFL learners in general and the Saudi EFL context in particular, no study appears to have directly examined the association between VR-based instruction on Saudi learners' perception and use of English idioms. Consequently, the intersection of virtual reality, idiomatic competence, and Saudi EFL learners receives little attention and therefore creates a research gap this study seeks to address.

3. Theoretical Framework

This current study draws its rationale from the Contrastive Analysis Hypothesis (CAH) model and cross-linguistic transfer. Cross-linguistic transfer is a broad concept that explains why Saudi EFL students face problems with English idioms. CAH states that second language learning depends on similarities and differences existing between learners' native language and the target language (Eckman, 1977). The relevance of CAH can be explained by the fact that idioms tend to be culture-bound and semantically non-literal. For this reason, it can be presumed that the understanding of English idioms by Saudi learners would be facilitated if such idioms had equivalent or similar expressions in Arabic. Such equivalence would enable positive transfer from the first language and hence successful comprehension. On the other hand, lack of Arabic equivalents would mean that learners will misunderstand, interpret literally, or even avoid idiomatic forms. Cross-linguistic transfer generally implies that second language learners draw on their knowledge of the first language when encountering new language forms, especially figurative ones (Jarvis & Pavlenko, 2008). Within VR-based learning environments, learners encounter idioms in rich contextual situations that help them move beyond direct translation and develop meaning through authentic interaction. Therefore, both CAH and cross-linguistic transfer are highly relevant to this study because they explain the linguistic processes underlying learners' perception and use of English idioms and provide a rationale for why immersive VR contexts may facilitate idiom comprehension.

The Involvement Load Hypothesis and Experiential/Embodied Learning Theory present complementary theories explaining how instruction in virtual reality may be beneficial for teaching. According to the Involvement Load Hypothesis, the acquisition of vocabulary and phrases will be facilitated if students are provided with activities that involve considerable cognitive load and include noticing, looking up the meaning of the language used, and evaluating the language used (Laufer & Hulstijn, 2001; Yanagisawa & Webb, 2021). The nature of virtual reality makes learners engage in such activities since they will have to understand the meaning of the language input presented and use it in their interactions. At the same time, Experiential Learning Theory argues that knowledge is constructed through direct experience and reflection (Kolb, 1984), while Embodied Learning Theory emphasizes that cognition is grounded in sensory, physical, and contextual experiences (Barsalou, 2008). These perspectives are particularly relevant to idiom learning because idioms are best understood when learners can associate figurative meanings with concrete situations and experiences. Through immersive simulations, VR allows learners to observe, experience, and interact with contexts in which idioms occur naturally, making abstract meanings more comprehensible and memorable (Laufer & Hulstijn, 2001). Collectively, these theories support the study's expectation that VR-based instruction will positively influence Saudi EFL learners' perception, comprehension, and use of English idioms by combining meaningful contextual exposure, active cognitive engagement, and authentic experiential learning.

These theoretical frameworks contribute to the hypotheses suggested by this study in terms of the influence of VR-based instruction on Saudi EFL students' perception and idiom usage. According to Barsalou (2008), the interplay between exposure to authentic contexts, the active involvement of the brain in the learning process, and interaction with the virtual environment implies that students exposed to VR-based instruction will experience higher comprehension of English idioms and better performance in their use. In addition, VR can have a positive effect on attitudes toward idiom acquisition since it provides students with an interesting, authentic learning environment that increases motivation, interest, and confidence in communication using figurative language (Eckman, 1977; Kolb, 1984). From this perspective, the use of VR-based instruction can result in improvements in both language skills and attitudes towards the idiom learning process. Consequently, the contrastive analysis hypothesis, the involvement load hypothesis, and the principles of experiential and embodied learning create an appropriate theoretical framework explaining the potential impact of VR-based instruction on idiomatic competence in Saudi EFL students (Yanagisawa & Webb, 2021).

4. Methodology

4.1 Research Design

This study used a mixed-methods design which integrated both quantitative data collected by pre-test and post-test and a learner questionnaire with qualitative data through classroom observation and feedback from instructors. While the quantitative part allowed for statistical analysis of the acquisition of idioms by the learners, the qualitative part allowed for descriptive understanding of how engaged the learners were in the process and what happened during the learning sessions. Such triangulation of methodology provided a broader perspective on learning results and learner experience (Hoang et al., 2022). Other studies have applied similar mixed methods in investigating affective, cognitive, and behavioral aspects of language learning using VR technology (e.g., Ebadijalal & Yousofi, 2022). The adopted design therefore incorporated empirical evidence into descriptive data on learners' perceptions, interaction patterns, and contextual learning experiences (Okumuş & Savaş, 2024).

4.2 Participants

The participants of this study were 60 male and female Saudi EFL university students aged between 19 and 22 who were second-year English majors at Umm Al-Qura University in Makkah, Saudi Arabia. Their proficiency levels, according to the testing conducted at university placements, were between B2 and C1 on the CEFR scale, which guaranteed the relative homogeneity in language. No

participants had received explicit training on English idioms previously, which was verified by a pre-study survey on the topic. The respondents were split evenly into two instructional groups: Virtual reality (VR)-based instruction and traditional classroom instruction, under which both groups received the same idiomatic content and assessment conditions. Participants were randomly assigned within gender strata to ensure balanced representation of males and females across the VR-based and traditional instructional groups. The sample size ($N = 60$) was considered appropriate for an exploratory mixed-methods classroom-based study and is broadly consistent with sample sizes used in previous VR-based language-learning research. The sample allowed for balanced assignment across the two instructional conditions and provided sufficient descriptive and inferential data to examine learning gains, learner perceptions, and classroom observation patterns. Gender was used as a between-subjects factor in the ANOVA analysis, alongside the instructional group.

Table 1. Demographic profile of the participants

Participant Demographics	Details
Total participants	60 (30 Male, 30 Female)
Age range	19–22 years
English proficiency	CEFR B2–C1
Prior idiom instruction	None
Instructional conditions	30 VR-based, 30 traditional
Sampling method	Randomized gender-stratified

4.3 Instructional Materials and Tools

Two instructional modes were used to teach the target idioms. In the virtual reality condition, students used VRChat, an interactive multi-user virtual environment accessed through Meta Quest 3 headsets. Students communicated through avatars and participated in context-sensitive, scenario-based conversations in virtual spaces such as cafés, airports, and classrooms. These simulations provided opportunities to encounter idioms through realistic communicative interaction. In the traditional instructional condition, PowerPoint slides, instructor explanations, and classroom role-plays were used. Participants in both groups were taught the same 30 target idioms, divided into two matched sets of 15 idioms each. The first set consisted of idioms with Arabic functional or conceptual counterparts, whereas the second set included idioms without direct Arabic idiomatic equivalents, as shown in Tables 2 and 3. The target idioms were selected according to three criteria: frequency of use in everyday language, pedagogical relevance for Saudi EFL learners, and appropriateness for contextualized classroom and VR-based scenarios. To ensure comparability between the two instructional conditions, the idioms were balanced for frequency, familiarity, semantic transparency, and communicative usefulness. The instructional content was therefore equivalent across groups, with only the mode of presentation varying according to instructional condition.

Table 2. Sample of idioms with conceptual equivalents

English Idiom	Meaning
Hit the book	To study hard
Break the ice	To make people feel comfortable or start social interaction
Once in a blue moon	To happen very rarely
Piece of cake	To be very easy
Beat around the bush	To avoid speaking directly

Table 3. Sample of idioms without direct Arabic idiomatic equivalents

English idiom	Meaning
Under the weather	To feel sick or unwell
Hit the sack	To go to sleep
Break a leg	To wish someone good luck
Call it a day	To stop working for the day
Cutting corners	To do something quickly or cheaply in a way that reduces quality

Note. Tables 2 and 3 present representative examples only. The full list of target idioms is provided in Appendix A.

Instructors in both conditions followed the same teaching objectives, lesson sequence, and instructional focus to ensure consistency in content delivery. This design helped ensure that any observed differences in learning outcomes could be attributed primarily to the instructional mode rather than to differences in idiomatic content, exposure, or instructional quality.

Table 4 summarizes the instructional modes, platforms, learning contexts, and idiom sets used in the two instructional conditions.

Table 4. Instructional modes, platforms, learning contexts, and idiom sets

Instructional mode	Platform / Tools	Learning context	Idiom set
VR-Based	VRChat via Meta Quest 3	Immersive, scenario-based	15 idioms
Traditional	PowerPoint and role-play	Classroom-based, instructor-led	15 idioms

4.4 Analytical Procedures

The study was conducted within the framework of a 13-week-long teaching and data-collection period to evaluate the relative effectiveness of the virtual reality (VR) and traditional idiom teaching. In Week 1, both groups completed the pre-test to establish a baseline for idiom

perception and understanding. This was followed by ten weeks of instruction (Weeks 2-11), during which the two sets of 15 American English idioms were introduced to the learners either through VRChat-based scenarios (VR group) or classroom-based lessons using PowerPoint and role-plays (traditional group). Idiom frequency, transparency, and familiarity were balanced across sets, and the instructional order was counterbalanced across groups to minimize order effects.

Classroom and VR sessions were periodically observed during the instructional phase (e.g., in Weeks 3, 7, and 11) with a focus on learner engagement, idiom use, and contextual comprehension. In Week 12, participants completed the 25-item Likert-scale learner survey on perceived effectiveness, engagement, and usability of the instructional mode. Finally, in Week 13, a post-test parallel to the pre-test was administered to both groups to measure gains in idiomatic competence. A trained instructor delivered all sessions following the same teaching scripts and schedules so that exposure duration and instructional quality were equivalent across conditions. Table 5 displays procedures and data-collection timelines across the 13-week intervention.

Table 5. Overview of the study procedure and data collection timeline

Study phase	Activity	Data collected	Week
Baseline	Pre-test	Idiom perception and use	1
Instruction	VR & traditional sessions	Observation notes on engagement, idiom use, and contextual comprehension	2-11
Reflection	Learner surveys	Perception & engagement	12
Evaluation	Post-test	Gains in idiomatic competence	13

4.5 Instruments

Four instruments were utilized in gathering both quantitative and qualitative data, namely idiomatic expression recognition tests, a learner survey, an instructor survey, and an observation checklist.

Idiomatic expression recognition tests were done in pre-test and post-test format. This tool aimed to assess learners' perception, understanding, and usage of the target idioms. Both pre-test and post-test were parallel in terms of structure and content, featuring the same idiom categories. There were three kinds of questions asked in these tests, namely multiple-choice, matching, and sentence-completion questions. In multiple-choice questions, learners picked the right contextual meaning of each idiom. For matching questions, learners matched idioms to their meaning. In sentence completion, learners employed idioms in sentences that were meaningful in context. All the correct answers had one point, while the incorrect and no answers got zero. The scoring for sentence completion questions considered its semantic and contextual appropriateness.

The learner survey was a set of 25 Likert-scaled items that addressed five aspects: engagement and interaction, effectiveness of instructions, motivation and pleasure, cognitive processes and strategies, and usability and learning environment. The instructor survey consisted of 15 Likert-scaled items. It assessed instructional feasibility, learner engagement, classroom management, and technical usability. The test items, survey statements, and observational categories were developed by the researcher. They were validated in relation to the study objectives, research questions, instructional material, and target idiom categories for content validity.

Structured observation checklists were employed to collect information about learner participation, idiom usage, contextual understanding, usage of translation, interactions, need for clarification, and technical problems during some classes and virtual reality sessions. The use of observation checklists made it possible to compare behavior in the two instructional conditions. The observation notes were classified thematically into four groups: engagement, contextual inference, usage of idiomatic expressions, and learning problems.

4.6 Validity and Reliability

The validity of the study was assured using a number of methods. First, the research instruments, which include idiom comprehension and use tests, learner and instructor surveys, as well as the classroom observation checklist, were designed based on existing studies and theories regarding idioms, virtual reality-assisted language learning, and teaching English as a foreign language. The content validity of the instruments was ensured by reviewing them through an expert panel of applied linguists, educational technologists, and EFL teachers, who checked their relevance, clarity, and appropriateness in terms of the study's purpose. Feedback from the expert panel was used in modifying the instruments. Additionally, a mixed-methods approach ensured construct validity through methodological triangulation, where findings from the pre- and post-test were validated by qualitative data from surveys and classroom observation.

The reliability of the study was ensured through the use of consistent research instruments and the procedure of data collection. All research instruments used for the study were tested before the actual data collection process started. This was done by administering them to a similar group of Saudi English language learners. The pre-test and post-test procedures employed in data collection were also consistent since the tests were done in similar conditions for each participant in the study. For the classroom observation test, specific observation criteria and coding methods were developed to ensure consistency in data collection procedures.

4.7 Ethical Considerations

The procedures undertaken during research were all consistent with the ethical guidelines provided by the institution. The participants were made aware of the reasons behind the research, the process involved, and that they could opt out anytime without facing any form of academic punishment. Informed consent from the participants was sought before conducting the research. Confidentiality of the participants was ensured through the use of codes and ensuring that the answers provided were kept confidential and could not be accessed by anyone other than the researchers.

5. Results

5.1 Pre-Test and Post-Test Results

The pattern of distribution of post-test scores was compatible with the assumptions of normality. This was supported by non-significant findings in the Kolmogorov-Smirnov test ($D = 0.077$, $p = 0.200$) and the Shapiro-Wilk test ($W = 0.986$, $p = 0.705$). Further, skewness (-0.098) and kurtosis (-0.120) scores approximated to zero, which signifies a symmetrical and mesokurtic distribution. Moreover, the mean score (86.76) and median (87.35) were almost equal. These statistics imply that the post-test scores were fit for parametric statistical tests. Table 6 presents the normality test findings for post-test scores.

Table 6. Tests for normality

Test	Statistic	df	p
Kolmogorov-Smirnov D	0.077	60	0.200
Shapiro-Wilk W	0.986	60	0.705

5.2 Mixed ANOVA Results

To investigate the effect of instructional group (VR and traditional) and gender (male and female) on idiom learning gains across time (pre-test and post-test), a mixed-design ANOVA was used. Time was a within-subjects factor with two levels, and gender and instructional mode were between-subjects factors. The assumptions for mixed ANOVA were met, normality was supported by non-significant normality tests, homogeneity of variances was met, and sphericity was automatically satisfied because the within-subjects factor contained only two levels.

Descriptive statistics revealed similar trends for pre-test and post-test scores among male and female learners in both instructional groups. Prior to training, the female VR ($M = 47.31$, $SD = 5.80$) and female traditional ($M = 45.63$, $SD = 5.42$) groups had slightly higher scores than the male VR ($M = 44.97$, $SD = 5.61$) and male traditional ($M = 43.91$, $SD = 4.59$) groups. The pre-test grand mean for the sample was 45.45 ($SD = 5.38$). All groups showed improvement following instruction. At post-test, the VR group scored higher than the traditional group for both males (VR: $M = 84.79$, $SD = 5.39$; traditional: $M = 82.63$, $SD = 6.61$) and females (VR: $M = 91.79$, $SD = 5.69$; traditional: $M = 87.83$, $SD = 4.95$). The overall post-test mean was 86.76 ($SD = 6.54$). These descriptive patterns suggest that the VR group achieved higher post-test scores than the traditional group, although the gain difference over time was not statistically significant. Table 7 presents the descriptive statistics for pre-test and post-test scores by gender and instructional group.

Table 7. Descriptive statistics for pre-test and post-test scores by gender and instructional group

Test	Gender	Instructional group	M	SD	N
Pre-Test	Male	VR	44.97	5.61	15
Pre-Test	Male	Traditional	43.91	4.59	15
Pre-Test	Female	VR	47.31	5.80	15
Pre-Test	Female	Traditional	45.63	5.42	15
Pre-Test	Total	VR	46.14	5.73	30
Pre-Test	Total	Traditional	44.77	5.01	30
Pre-Test	Total	Overall	45.45	5.38	60
Post-Test	Male	VR	84.79	5.39	15
Post-Test	Male	Traditional	82.63	6.61	15
Post-Test	Female	VR	91.79	5.69	15
Post-Test	Female	Traditional	87.83	4.95	15
Post-Test	Total	VR	88.29	6.51	30
Post-Test	Total	Traditional	85.23	6.32	30
Post-Test	Total	Overall	86.76	6.54	60

All multivariate tests showed a highly significant main effect of Time (Pillai's Trace = 0.970; Wilks' Lambda = 0.030; Hotelling's Trace = 32.245; Roy's Largest Root = 32.245), with a very large improvement from pre-test to post-test ($F(1.56) = 1805.72$, $p < 0.001$, partial $\eta^2 = 0.970$). The partial eta squared value indicates that approximately 97% of the variance in score change was associated with Time, reflecting a very large instructional effect across the full sample. A significant Time $\times$ Gender interaction was found (Pillai's Trace = 0.073, $F(1.56) = 4.38$, $p = 0.041$, partial $\eta^2 = 0.073$), meaning that there was some difference between males and females in the extent of their improvement, with females improving more. The multivariate interaction of Time $\times$ Instructional Group was not significant, however ($p = 0.388$), which means that while the VR learners scored higher descriptively, there was no statistically significant difference in the gain scores between the VR and traditional groups in this multivariate test. The three-way interaction (Time $\times$ Gender $\times$ Instructional Group) was also not significant ($p = 0.760$), indicating that gender differences in change were not meaningful across instructional groups. Multivariate results overall demonstrate that instructional intervention was very effective and suggest minor gender differences in gains. Table 8 presents the multivariate test results for the mixed-design ANOVA.

Table 8. Multivariate tests for the mixed-design ANOVA

Effect	Pillai's Trace	F	df	p	η^2
Time	0.970	1805.72	1.56	< 0.001	0.970
Time × Gender	0.073	4.38	1.56	0.041	0.073
Time × Instructional Group	0.013	0.76	1.56	0.388	0.013
Time × Gender × Instructional Group	0.002	0.09	1.56	0.760	0.002

Because the within-subjects factor Time had only two levels, the assumption of sphericity was automatically satisfied.

Results of the within-subjects effects showed a significant main effect of Time, $F(1.56) = 1805.72$, $p < 0.001$, $\eta^2 = 0.970$, indicating substantial improvement from pre-test to post-test across both instructional conditions. The Time × Gender interaction was also significant, $F(1.56) = 4.38$, $p = 0.041$, $\eta^2 = 0.073$, indicating a small improvement due to gender. On the other hand, the Time × Instructional Group interaction did not yield significant results, $F(1.56) = 0.76$, $p = 0.388$, implying similar improvement over time for both groups. The Time × Gender × Instructional Group interaction was also not significant, $F(1.56) = 0.09$, $p = 0.760$. Table 9 summarizes the within-subjects effects for Time and its interactions.

Table 9. Tests of within-subjects effects for the mixed-design ANOVA

Effect	F	df	p	η^2
Time	1805.72	1.56	< 0.001	0.970
Time × Gender	4.38	1.56	0.041	0.073
Time × Instructional Group	0.76	1.56	0.388	0.013
Time × Gender × Instructional Group	0.09	1.56	0.760	0.002

When averaged across time, between-subjects analyses revealed significant effects of gender and instructional mode on overall performance. There was a significant main effect of gender, $F(1.56) = 15.06$, $p < 0.001$, partial $\eta^2 = 0.212$, which indicates that the female learners had higher scores at both testing occasions. Besides, a significant main effect of the instructional group was found, $F(1.56) = 4.47$, $p = 0.039$, partial $\eta^2 = 0.074$, which indicated that the VR group had a higher mean score compared to the traditional group. The Gender × Instructional group interaction, however, was non-significant, meaning that males and females responded equally to the instructional format. Table 10 presents the between-subjects effects of gender and instructional group.

Table 10. Between-subjects effects of gender and instructional group on idiom test scores

Effect	F	df	p	η^2
Gender	15.06	1.56	< 0.001	0.212
Instructional Group	4.47	1.56	0.039	0.074
Gender × Instructional Group	0.34	1.56	0.564	0.006

5.3 Results Pertaining to Learners' Survey

All 60 participants completed a 25-item Likert scale survey, which provided quantitative and qualitative data on learners' perceptions of idiom instruction on 5 dimensions: engagement and interaction, perceived effectiveness of instruction, motivation and enjoyment, cognitive processing and strategy use, and usability and learning environment. Engagement and interaction received a mean score of 3.04 ($SD = 0.44$), indicating moderate engagement with the interventions. A large number of participants mentioned that the VR activities captured their attention and aided in their interaction, although there was some difference among the responses, which showed that all the participants did not have the same experience of engagement. Effectiveness of instruction, with a mean value of 2.98 and $SD = 0.58$, revealed that the learners had moderate agreement that the use of VR technology to deliver instructions about idioms helped them understand and comprehend better. The open-ended response showed that the participants found it helpful that the idioms were explained using examples, although some learners said that sometimes traditional explanation was necessary. Motivation and enjoyment, with a mean of 3.01 and $SD = 0.76$, revealed that the learners had moderate motivation and enjoyed the lessons. Cognitive processing and strategy use obtained an average score of 2.88 ($SD = 0.63$), implying the moderate endorsement of the usefulness of virtual reality in strategic cognitive processing and utilization of idioms by learners. Learners found the scenarios useful for visualizing and memorizing idiomatic expressions, but some suggested the need for more guided practice in order to develop such strategies. Usability and learning environment scored an average rating of 3.00 ($SD = 0.68$), which implies that on the whole, learners found the virtual reality tool user-friendly, with some problems associated with navigation and sound. Although some technical difficulties were encountered, learners perceived the environment as supporting learning. Table 11 presents learner survey scores for all five dimensions.

Table 11. Summary of learner survey results

Dimension	N	M	SD
Perceived Effectiveness of Instruction	60	2.98	0.58
Engagement & Interaction	60	3.04	0.44
Motivation & Enjoyment	60	3.01	0.76
Cognitive Processing & Strategy Use	60	2.88	0.63
Usability & Learning Environment	60	3.00	0.68

Note. All survey dimensions were interpreted as moderate based on the observed scale means.

5.4 Results Pertaining to Instructors' Results

An assessment survey consisting of 15 items was administered to elicit evaluations from the four EFL instructors who conducted or delivered the instructional lessons. Overall, most of the ratings were positive, with 68.33% strongly agreeing and 26.67% agreeing that the instructional design and learners' performance are acceptable.

Concerning the participation of learners, instructors observed that the learners were actively participating, enthusiastic, and willing to express themselves, especially when conducting the interactive VR lessons, because language is used in situational terms. Concerning the suitability of the intervention, instructors stated that the intervention was pedagogically sound, helped in the comprehension of idiomatic expressions, and incorporated contextualized activities related to course goals.

On the part of the implementation process, instructors observed that the materials were not problematic and adaptable to the instructional schedule. Nevertheless, there were some technical problems, such as audio problems and the headset connection. Nonetheless, the use of VR technology in idiom instruction was pedagogically workable for future EFL classes.

Table 12. Instructor survey summary

Response Option	Frequency	Percentage
Strongly Agree	41	68.33%
Agree	16	26.67%
Neutral	2	3.33%
Disagree	1	1.67%
Strongly Disagree	0	0%

Note. Frequencies refer to item-level responses on 15 survey items done by four instructors

5.5 Observation Insights

Observations taken from the learning phase demonstrated distinct differences in terms of the degree and form of engagement and the use of idioms between traditional and VR learning environments. During the initial part of the traditional class session, the learners were not willing to participate in the role-playing task. Communication was teacher-controlled, and most of the participants used the L1 (Arabic) language to translate the meaning of the idioms. Engagement became moderate in later parts of the session; however, the learners continued to depend on literal translation strategies. On the other hand, the VR class sessions seemed to motivate interaction and usage of idioms contextually. The learners seemed to be more confident in themselves, using idioms, and asking questions about the meanings of some idioms through interaction instead of translation. Significantly, the VR sessions appeared to encourage more contextualized idiom use than the traditional sessions.

The quantitative findings showed substantial improvement in idiom scores from pre-test to post-test across both instructional conditions. Although the VR group achieved higher overall mean scores than the traditional group, the non-significant Time $\times$ Instructional Group interaction indicated that improvement over time was comparable across the two groups. Learner survey results also showed moderate perceptions of engagement, perceived effectiveness, motivation, cognitive strategy use, and usability. Together, these findings suggest that both instructional approaches supported idiom learning, while VR-based instruction showed promising but not statistically conclusive advantages over traditional instruction.

6. Discussion

The findings provide partial support for the study hypotheses and suggest that both instructional conditions contributed to substantial gains in idiom learning. H1 predicted that VR-based instruction would lead to greater improvement in learners' idiom perception, comprehension, and use than traditional instruction. Results of the mixed-design ANOVA revealed a very high main effect of Time ($F(1.56) = 1805.72$, $p < 0.001$, partial $\eta^2 = 0.970$), indicating significant pre- to post-test differences in idiom scores overall across the sample. When performance over time was examined, a significant main effect of instructional group ($F(1.56) = 4.47$, $p = 0.039$, partial $\eta^2 = 0.074$) indicated that the VR group had a higher mean than the traditional group. The non-significant Time $\times$ Instructional group interaction ($F(1.56) = 0.76$, $p = 0.388$), however, indicates that the amount of change from pre- to post-test was similar across both instructional groups. Therefore, H1 was partially supported: the VR group showed a higher mean score at the end of the intervention, but its gain score was not statistically greater than that of the traditional group. The gain distribution generally agrees with the findings of previous studies, which indicated that immersive contexts promote deeper cognitive processing and memorization of lexical items (Chen et al., 2021) and that spatial interaction in high-immersion VR may facilitate lexical memory encoding through the multisensory stimulation (Feng & Ng, 2024).

Concerning the first research question, it examined the extent to which VR-based instruction is associated with Saudi EFL learners' idiomatic competence compared with traditional instruction. The findings revealed that both instructional approaches significantly improved learners' recognition and use of English idioms. Although the VR group obtained higher post-test scores than the traditional group, the non-significant time $\times$ instructional interaction indicates that both groups improved at a comparable rate. This result suggests that VR instruction may provide additional benefits in terms of learning outcomes, but these advantages were not sufficiently large to produce statistically distinct growth trajectories over time. Such findings support the view that effective idiom learning depends not only on the instructional medium itself but also on the quality of contextualized exposure and meaningful engagement with figurative language. These findings correlate with Türker's (2019) argument that emphasizes the importance of contextual support in idiom acquisition and that

supportive contexts facilitate the acquisition of L2 idioms and that contextual information interacts positively with learners' first-language knowledge. Findings also reconcile with Yu and Boers (2023) and Elgort et al. (2020), who argue that inferencing idiomatic meanings from context enhances learners' retention of idiomatic expressions. The present findings further indicate that VR environments may enrich contextual exposure without necessarily producing dramatically greater gains than well-designed traditional instruction.

In terms of research questions No. two and three, they examined the learning strategies used by learners and the impact of equivalent words in Arabic in the comprehension of idioms. Questionnaire results showed moderate engagement and perceptions of the relevance of the strategies used by the learners. However, the teacher viewed the use of VR lessons suitable for the classroom environment in Saudi Arabia. The observations further showed that learners using virtual reality were highly dependent on contextual clues and not on literal translation in comprehending idioms. This implies that the learners were encouraged to get meanings from contextual and visual clues rather than translations. Therefore, the present results indicate that VR could promote the development of more efficient learning methods because of the presence of context. Furthermore, it should be noted that idioms that had Arabic equivalents were marked with higher accuracy, which agrees with the theory of cross-linguistic transfer of information. It seems that learners utilize the conceptual and semantic proximity of idioms in English and Arabic, thus benefiting from the prior linguistic knowledge. This result can be agreed upon with Türker (2019), who found out that the cross-linguistic similarity has a positive effect on the process of acquisition of idioms, especially if there is supportive information about context.

H2 predicted that learners in the VR-based condition would use more contextually relevant and inferential learning strategies. The observation data provided cautious support for this hypothesis. During the VR sessions, learners appeared to rely less on direct L1 translation and more on contextual inferencing, clarification requests, and meaning negotiation. These patterns suggest that the immersive scenarios may have encouraged learners to process idioms through situational context rather than isolated memorization. However, because the observation data were descriptive and were not analyzed using a formal coding scheme or inter-rater reliability procedure, this finding should be interpreted cautiously.

H3 predicted that idioms with Arabic functional or conceptual counterparts would be easier for learners to understand and use than idioms without direct Arabic equivalents. Descriptive patterns suggested that learners processed equivalent idioms more easily, possibly because these expressions could be linked to existing L1-based conceptual knowledge. At the same time, VR-based instruction appeared to support learners' understanding of non-equivalent idioms by placing them in meaningful communicative contexts. However, because the present study did not include a separate inferential comparison between the two idiom categories, this finding should be interpreted as suggestive rather than conclusive.

In general, the results of this study align with the broader literature indicating that immersive, task-based VR instruction can foster engagement, confidence, and idiom use (Dooly et al., 2023) and support the view that VR is a promising cognitively and affectively rich medium for teaching complex language forms, even if its added benefits over traditional instruction were modest in this particular sample. From a theoretical perspective, the findings are consistent with the Involvement Load Hypothesis (ILH), because the VR tasks required learners to search for and evaluate idiomatic meanings in context, thereby increasing cognitive involvement and supporting retention. The relative ease with which idioms with Arabic equivalents were learned also aligns with cross-linguistic transfer, as conceptually similar forms may be more readily mapped onto learners' existing L1-based knowledge. In addition, the observed gains for non-equivalent idioms suggest that repeated contextual exposure in immersive environments may support conceptual restructuring in figurative-language learning.

However, the very large effect size for Time ($\eta^2 = 0.970$) and the strong gains in both groups should be interpreted with caution. The absence of a delayed post-test makes it impossible to determine whether gains were sustained beyond the immediate post-instruction period, and short-term gains may have been influenced by instruction on the specific test items. In addition, the observation findings were descriptive and did not include a formal qualitative coding scheme or inter-rater reliability procedure. Moreover, the single-site sample and the limited set of 30 idioms restrict the generalizability of the findings to other institutions, proficiency levels, or idiom sets. Therefore, the current results should be viewed as promising but context-specific evidence that VR may serve as a supplementary tool for idiom instruction, not as proof of superiority over traditional classroom instruction.

7. Conclusion

This study investigated the impact of virtual reality-based instruction on Saudi EFL learners' perception, comprehension, and use of English idioms in comparison with traditional classroom-based instruction. Using a mixed-methods design that combined pre- and post-tests, learner and instructor surveys, and structured classroom observations, the study found substantial improvement in idiom learning across both instructional conditions. The quantitative findings showed a significant improvement from pre-test to post-test for the full sample, indicating that both instructional approaches contributed to learners' idiomatic development. Although the VR group achieved higher overall mean scores than the traditional group, the Time $\times$ Instructional Group interaction was not statistically significant. This indicates that the amount of improvement over time was comparable across the two groups. Therefore, VR-based instruction should be understood as a promising supplementary approach rather than a conclusively superior alternative to traditional instruction. Also, the results of the survey and observations reveal the possibility of supporting context-based learning of idioms using virtual reality since the learners would learn to depend more on context-inferred meaning and meaning negotiation rather than translation. On the other hand, instructors' feedback reveals that VR-based instruction of idioms is pedagogically possible despite some technical matters like the quality of the audio and connectivity of the headsets. The findings suggest that VR can provide meaningful experiential contexts for idiom learning in Saudi EFL classrooms.

However, because the study was limited to one institutional context, one immediate post-test, and a limited set of target idioms, the findings should be interpreted as Saudi context-oriented.

7.1 Pedagogical Implications

There are pedagogical implications arising from the findings of the study pertinent to EFL learning and teaching in Saudi Arabia. They suggest that virtual reality (VR) may help connect linguistic competence with culturally and contextually relevant language use by offering learners realistic experiential opportunities to practice idiomatic expressions. This experiential context may support learning, memory, and learner control (Lee et al., 2024). The use of VR-based modules in Saudi EFL classrooms, where idioms may be underrepresented, could also support communicative practice, language accuracy, and sociocultural awareness (Khafaga & Al-Johani, 2024). Pedagogically, VR-enhanced idiom instruction may be most useful when implemented as part of a blended model that combines classroom scaffolding with virtual scenarios. Pedagogical scenarization tools such as VR-PEAS suggest that teachers may be able to create contextualized VR learning activities without requiring highly advanced technical expertise (Oubahssi et al., 2024). Further, the alignment between VR and constructivist or experiential learning perspectives makes it a potentially useful approach for supporting motivation and learner-centered education (Mallek et al., 2024). Several platforms, such as VRChat or Immerse, allow instructors to design VR-based scenarios around idioms in which learners complete communicative tasks that simulate cultural situations. There is evidence suggesting that such immersive activities may support contextual language use and confidence (Bonner et al., 2023; Cao et al., 2025). To scale up more widely, institutional support would be required to establish sustainable VR frameworks in EFL curricula.

7.2 Limitations

Although this study provides useful findings, several limitations should be acknowledged. First, the sample was drawn from one Saudi university and included 60 second-year English majors, which limits the generalizability of the findings to other Saudi EFL populations, institutions, and proficiency levels. Second, the study used one VR platform and device type, namely VRChat through Meta Quest 3 headsets. Technical issues such as audio quality, headset connectivity, and possible motion sensitivity may have influenced some learners' engagement and performance. Third, the study did not include a delayed post-test; therefore, it was not possible to determine whether learners retained the target idioms beyond the immediate post-instruction period. Fourth, although the instruments were reviewed for alignment with the research questions and instructional content, reliability coefficients such as Cronbach's alpha were not calculated for the idiom tests or surveys. Fifth, the observation data were descriptive and were not analyzed through a formal qualitative coding scheme or inter-rater reliability procedure. Finally, the large effect of Time ($\eta^2 = 0.970$) is due to the learning effects or the increased familiarity as opposed to instructional effects alone, and therefore it should be interpreted cautiously. These limitations suggest that the findings should be interpreted as context-specific and exploratory rather than fully generalizable.

7.3 Recommendations for Future Research

It is recommended that future research increases the sample size by recruiting participants with varied backgrounds and language proficiency levels. Longitudinal designs with delayed post-tests should also be used to examine idiom retention and transfer, particularly in spontaneous speech. Another promising direction is the integration of AI-supported and adaptive VR systems that can personalize idiom-learning experiences according to learners' needs and performance. Cross-cultural and cross-linguistic studies could also examine whether idiom acquisition differs across learners from different L1 backgrounds. Finally, mixed-reality and mobile-based VR platforms should be explored to improve accessibility and examine the feasibility of implementing immersive idiom instruction in regular EFL curricula.

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Declaration of Competing Interest

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed Consent

Informed consent was obtained from all participants.

Ethics Approval

This article does not require ethical approval.

Data Availability Statement

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Use of Artificial Intelligence

The author used Grammarly for linguistic improvement (to check grammar, spelling, and structure). The author reviewed and verified all AI-assisted revisions and take full responsibility for the final content of the manuscript.

Supplementary Materials

No supplementary materials are available.

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References

- Abdulaal, M., & Alenazi, M. (2023). Examining the vocabulary knowledge and idiomatic structures of EFL learners in a culturally-oriented learning context. *World Journal of English Language*, 13(8), 606-614. <https://doi.org/10.5430/wjel.v13n8p606>
- Albarqi, G. (2026). Speech fluency among L1 Arabic elementary and intermediate learners of English as a foreign language. *International Review of Applied Linguistics in Language Teaching*, 64(1), 35-54. <https://doi.org/10.1515/iral-2024-0176>
- Alhaysony, M. (2017). Strategies and difficulties of understanding English idioms: A case study of Saudi university EFL students. *International Journal of English Linguistics*, 7(3), 70-84. <https://doi.org/10.5539/ijel.v7n3p70>
- Aljuraifani, Y. A., & Alanazi, Z. M. (2025). L1-induced grammatical errors affecting Saudi Female EFL students' academic writing: A cross-linguistic study of Arabic language interference. *World Journal of English Language*, 15(5), 171-188. <https://doi.org/10.5430/wjel.v15n5p171>
- Alkayed, M. (2023). The Challenges Facing Translation Students in Translating Sports Idiomatic Expressions from Arabic into English. *International Journal of Arabic-English Studies*, 24(1), 401-418. <https://doi.org/10.33806/ijaes.v24i1.568>
- Alkhadem, K. Q. (2024). Translating culture-specific expressions from English into Arabic: Yemeni students as a case study. *World Journal of English Language*, 14(5), 341-347. <https://doi.org/10.5430/wjel.v14n5p341>
- Alkhresheh, M. H. (2024). The role of presentation-based activities in enhancing speaking proficiency among Saudi EFL students: A quasi-experimental study. *Acta Psychologica*, 243, Article: 104159, 1-10. <https://doi.org/10.1016/j.actpsy.2024.104159>
- Alqahtani, A. A. (2025). Strategic use of L1 in idiom processing among Saudi EFL learners: A quantitative analysis of proficiency and comprehension strategies. *World Journal of English Language*, 15(8), 96-108. <https://doi.org/10.5430/wjel.v15n8p96>
- Azizi, Z., & Khafaga, A. (2023). Scaffolding via group-dynamic assessment to positively affect motivation, learning anxiety, and willingness to communicate: A case study of high school students. *Journal of Psycholinguistic Research*, 52(3), 831-851. <https://doi.org/10.1007/s10936-023-09935-6>
- Bacca-Acosta, J., Tejada, J., Fabregat, R., Kinshuk, & Guevara, J. (2021). Scaffolding in immersive virtual reality environments for learning English: an eye tracking study. *Educational Technology Research and Development*, 70(1), 339-362. <https://doi.org/10.1007/s11423-021-10068-7>
- Barsalou, L. W. (2008). Grounded cognition. *Annual Review of Psychology*, 59, 617-645. <https://doi.org/10.1146/annurev.psych.59.103006.093639>
- Bonner, E., Lege, R., & Frazier, E. (2023). Teaching CLIL courses entirely in virtual reality. *CALICO Journal*, 40(1), 45-67. <https://doi.org/10.1558/cj.22676>
- Cao, J., & Luo, H. (2025). Combining virtual reality and EEG biofeedback for enhanced EFL learning: a sociocultural approach. *Education and Information Technologies*, 30(11), 15299-15328. <https://doi.org/10.1007/s10639-025-13348-4>
- Chen, C. (2016). The effects of virtual reality learning environment on EFL learners' vocabulary acquisition. *Educational Technology & Society*, 19(3), 237-248.
- Chen, C., Hung, H., & Yeh, H. (2021). Virtual reality in problem-based learning contexts: Effects on the problem-solving performance, vocabulary acquisition, and motivation of English language learners. *Journal of Computer Assisted Learning*, 37(3), 851-860. <https://doi.org/10.1111/jcal.12528>
- Cooper, T. C. (1999). Processing of idioms by L2 learners of English. *TESOL Quarterly*, 33(2), 233-262. <https://doi.org/10.2307/3587719>

- Dooly, M., Thrasher, T., & Sadler, R. (2023). "Whoa! Incredible!" Language learning experiences in virtual reality. *RELC Journal*, 54(2), 321-339. <https://doi.org/10.1177/00336882231167610>
- Ebadijalal, M., & Yousofi, N. (2022). "Take me on a virtual trip if you want me to write better!": The impact of Google expeditions on EFL learners' writing motivation and performance. *Computer-Assisted Language Learning*, 37(3), 1-23. <https://doi.org/10.1080/09588221.2022.2123001>
- Eckman, F. R. (1977). Markedness and the contrastive analysis hypothesis. *Language Learning*, 27(2), 315-330. <https://doi.org/10.1111/j.1467-1770.1977.tb00124.x>
- Elgort, I., Beliaeva, N., & Boers, F. (2020). Contextual word learning in the first and second language: Definition placement and inference error effects on declarative and non-declarative knowledge. *Studies in Second Language Acquisition*, 42(1), 7-32. <https://doi.org/10.1017/S0272263119000561>
- Fathi, J., Pawlak, M., Mehraein, S., Hosseini, H. M., & Derakhshesh, A. (2023). Foreign language enjoyment, ideal L2 self, and intercultural communicative competence as predictors of willingness to communicate among EFL learners. *System*, 115, 103067-103067. <https://doi.org/10.1016/j.system.2023.103067>
- Feng, B., & Ng, L.-L. (2024). The spatial influence on vocabulary acquisition in an immersive virtual reality-mediated learning environment. *International Journal of Computer-Assisted Language Learning and Teaching*, 14(1), 1-17. <https://doi.org/10.4018/ijcallt.339903>
- Ghasemi, A., & Ahmadian, M. (2023). Research into intercultural communicative competence: A model test. *Journal of Intercultural Communication*, 23(2), 75-87. <https://doi.org/10.36923/jicc.v23i2.75>
- Hoang, D. T. N., McAlinden, M., & Johnson, N. F. (2022). Extending a learning ecology with virtual reality mobile technology: oral proficiency outcomes and students' perceptions. *Innovation in Language Learning and Teaching*, 17(3), 1-14. <https://doi.org/10.1080/17501229.2022.2070626>
- Jamshed, M., Almashy, A., Saleem, M., & Warda, W. U. (2024). Assessing Saudi EFL learners' use and understanding of English idioms: Perceptions, problems, and patterns of learning. *Journal of Language Teaching and Research*, 15(3), 1001-1009. <https://doi.org/10.17507/jltr.1503.34>
- Jarvis, S., & Pavlenko, A. (2008). *Crosslinguistic influence in language and cognition*. Routledge. <https://doi.org/10.4324/9780203935927>
- Khafaga, A., & Al-Johani, H. M. (2024). The impact of virtual learning on students' engagement in the Saudi EFL context: A connectivism-theoretic perspective. *World Journal of English Language*, 14(3), 504-504. <https://doi.org/10.5430/wjel.v14n3p504>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
- Laufer, B., & Hulstijn, J. H. (2001). Incidental vocabulary acquisition in a second language: The construct of task-induced involvement. *Applied Linguistics*, 22(1), 1-26. <https://doi.org/10.1093/applin/22.1.1>
- Lee, S.-M. (2025). Explore and experience London: Learning literature and culture through immersive virtual reality in the EFL classroom. *Education and Information Technologies*, 30(10), 13539-13563. <https://doi.org/10.1007/s10639-025-13341-x>
- Lee, S.-M., Wang, X., Park, I., & Lestiono, R. (2024). It feels so real! Situated authentic language learning in immersive virtual reality. *Education and Information Technologies*, 29(18), 24023-24045. <https://doi.org/10.1007/s10639-024-12807-8>
- Legault, J., Zhao, J., Chi, Y. A., Chen, W., Klippel, A., & Li, P. (2019). Immersive virtual reality as an effective tool for second language vocabulary learning. *Languages*, 4(1), 1-32. <https://doi.org/10.3390/languages4010013>
- Liontas, J. (2017). Why teach idioms? A challenge to the profession. *Iranian Journal of Language Teaching Research*, 5(3) (Special Issue), 5-25. <https://doi.org/10.30466/ijltr.2017.20302>
- Mallek, F., Mazhar, T., Shah, S. F. A., Ghadi, Y. Y., & Hamam, H. (2024). A review on cultivating effective learning: synthesizing educational theories and virtual reality for enhanced educational experiences. *PeerJ Computer Science*, 10, e2000. <https://doi.org/10.7717/peerj-cs.2000>
- Miller, J. (2020). The bottom line: Are idioms used in English academic speech and writing? *Journal of English for Academic Purposes*, 43, 100810. <https://doi.org/10.1016/j.jeap.2019.100810>
- Moreb, B. (2022). *Saudi EFL learners' detection and comprehension of English vivid phrasal idioms: A conceptual replication study*. Doctoral dissertation, University of South Florida. USA.
- Nadeem, N., & Almowalad, S. (2022). Challenges and strategies of acquiring English idioms for EFL undergraduate Saudi students. *Journal of Applied Linguistics and Language Research*, 9(4), 55-68.
- Okumuş, A., & Savaş, P. (2024). Investigating EFL teacher candidates' acceptance and self-perceived self-efficacy of augmented reality. *Education and Information Technologies*, 29, 16571-16596. <https://doi.org/10.1007/s10639-024-12517-1>
- Oubahssi, L., Piau-TOFFOLON, C., & Mahdi, O. (2024). VR-Peas: a Virtual Reality Pedagogical Scenarisation tool. *Interactive Learning*

- Environments, *HAL-SHS (Human and Social Sciences)*, 1-34. <https://doi.org/10.1080/10494820.2024.2308094>
- Parmaxi, A. (2023). Virtual reality in language learning: a systematic review and implications for research and practice. *Interactive Learning Environments*, 31(1), 172-184. <https://doi.org/10.1080/10494820.2020.1765392>
- Peixoto, B., Cabral, L., Goncalves, G., Bessa, M., & Melo, M. (2023). Teaching EFL with immersive virtual reality technologies: A comparison with the conventional listening method. *IEEE Access*, 11, 21498-21507. <https://doi.org/10.1109/access.2023.3249578>
- Pérez, R. G. (2019). The development of a metaphoric competence. A didactic proposal of educational innovation. *Innovation in Language Learning and Teaching*, 13(4), 331-357. <https://doi.org/10.1080/17501229.2018.1466891>
- Qiu, X. bin, Shan, C., Yao, J., & Fu, Q. K. (2023). The effects of virtual reality on EFL learning: A meta-analysis. *Education and Information Technologies*, 29(4), 1-27. <https://doi.org/10.1007/s10639-023-11738-0>
- Šarić, A. (2022). A study of university students' idiomatic competence. *European Journal of Education (EJED)*, 5(1), 102-113. <https://doi.org/10.26417/270tsv35>
- Smith, C. A. (2021). One does not simply teach idioms: Meme creation as innovative practice for virtual EFL learners. *RELC Journal*, 54(3), 714-728. <https://doi.org/10.1177/00336882211044878>
- Tai, T.-Y., Chen, H., & Todd, G. (2020). The impact of a virtual reality app on adolescent EFL learners' vocabulary learning. *Computer Assisted Language Learning*, 35(4), 1-26. <https://doi.org/10.1080/09588221.2020.1752735>
- Türker, E. (2019). Idiom acquisition by second language learners: the influence of cross-linguistic similarity and context. *Language Learning Journal*, 47(2), 133-144. <https://doi.org/10.1080/09571736.2016.1221441>
- Wu, W.-C., Lin, I.-T., & Hsieh, J. C. (2022). Ubiquitous English idiom learning through mobile applications: Learning outcomes, motivation, anxiety, and behavioral patterns. *The Asia-Pacific Education Researcher*, 32(1-2), 1-20. <https://doi.org/10.1007/s40299-022-00685-y>
- Yanagisawa, A., & Webb, S. (2021). Involvement load hypothesis plus creating an improved predictive model of incidental vocabulary learning. *Studies in Second Language Acquisition*, 44, 1279-1308. <https://doi.org/10.1017/S0272263121000577>
- Yousif, A., Eligedi, R., & Bandu, S. (2023). Use of translated Saudi folk narratives to improve reading and speaking skills of Saudi EFL learners. *World Journal of English Language*, 13(6), 524-524. <https://doi.org/10.5430/wjel.v13n6p524>
- Yu, X., & Boers, F. (2023). Inferring the meaning of idioms: Does accuracy matter for retention in memory? *RELC Journal*, 55, 721-734. <https://doi.org/10.1177/00336882231181771>
- Zuo, H. (2020). The effects of electronic glosses on EFL learners' noticing and retention of idioms in reading. *The Asia-Pacific Education Researcher*, 30(2), 95-108. <https://doi.org/10.1007/s40299-020-00517-x>

Appendix A: Idioms

No.	Idiom	No.	Idiom
1	Burning the midnight oil	1	Beat around the bush
2	Spill the beans	2	Up in the air
3	Cutting corners	3	Pulls your leg
4	Break the ice	4	Let sleeping dogs lie
5	Costs an arm and a leg	5	See eye to eye
6	The ball is in your court	6	Miss the boat
7	Hit the book	7	Pull yourself together
8	Back to the drawing board	8	Hit the nail on the head
9	Call it a day	9	Bite the bullet
10	All ears	10	Break even
11	Once in a blue moon	11	Jump the gun
12	Break a leg	12	In hot water
13	Under the weather	13	Go the extra mile
14	Let the cat out of the bag	14	In the same boat
15	Piece of cake	15	Throw in the towel