

***“Fostering Oral Communication Skills in Young English Learners Through Virtual Reality:
An Innovative Approach to Language Learning”***

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“Fomento de las habilidades de comunicación oral en jóvenes estudiantes de inglés mediante la realidad virtual: un enfoque innovador para el aprendizaje de idiomas”

“Promuovere le abilità di comunicazione orale nei giovani studenti di inglese attraverso la realtà virtuale: un approccio innovativo all'apprendimento linguistico”

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Artículo de Investigación

*** Recibido:** 07-09-2026 ***Aceptado:** 19-09-2026 *** Publicado:** 21-09-2026

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Abstract

This study examined the use of Virtual Reality (VR) as an innovative instructional approach for fostering oral communication skills among third-year Baccalaureate students learning English as a foreign language. A quantitative, quasi-experimental design was employed using a pre-test and post-test to evaluate changes in students' speaking performance before and after the implementation of VR-supported communicative activities. The assessment focused on five dimensions of oral communication: fluency, pronunciation, vocabulary use, grammatical accuracy, and communicative effectiveness. The intervention incorporated immersive scenarios that simulated real-life situations, including interactions in restaurants, hotels, stores, and other everyday contexts. Descriptive statistics were calculated using IBM SPSS Statistics. The results showed improvement across all assessed dimensions, with the overall mean increasing from 1.64 in the pre-test to 3.53 in the post-test, representing a difference of 1.89 points. The greatest gains were observed in communicative effectiveness and contextualized vocabulary use. These findings suggest that VR can provide meaningful opportunities for learners to practice English in immersive and interactive environments that connect classroom instruction with real-life communication. The study concludes that Virtual Reality can serve as a valuable complementary resource for oral language development when combined with clear communicative objectives, structured tasks, teacher guidance, and appropriate feedback. Further research with larger samples, control groups, and longer interventions is recommended to strengthen the evidence regarding its effectiveness in EFL contexts.

Keywords: Virtual Reality, oral communication, EFL, speaking skills, immersive learning, Baccalaureate students

Resumen

Este estudio examinó el uso de la Realidad Virtual (RV) como un enfoque instruccional innovador para fomentar las habilidades de comunicación oral en estudiantes de tercer año de Bachillerato que aprenden inglés como lengua extranjera. Se empleó un diseño cuantitativo cuasiexperimental mediante la aplicación de un pretest y un postest para evaluar los cambios en el desempeño oral de los estudiantes antes y después de la implementación de actividades comunicativas apoyadas por Realidad Virtual. La evaluación se centró en cinco dimensiones de la comunicación oral: fluidez, pronunciación, uso de vocabulario, precisión gramatical y efectividad comunicativa. La intervención incorporó escenarios inmersivos que simulaban situaciones de la vida real, incluidas interacciones en restaurantes, hoteles, tiendas y otros contextos cotidianos. Los datos fueron procesados mediante estadística descriptiva utilizando IBM SPSS Statistics. Los resultados mostraron mejoras en todas las dimensiones evaluadas, con un incremento de la media general de 1,64 en el pretest a 3,53 en el postest, lo que representa una diferencia de 1,89 puntos. Los mayores avances se observaron en la efectividad comunicativa y en el uso contextualizado del vocabulario. Estos hallazgos sugieren que la Realidad Virtual puede proporcionar oportunidades significativas para que los estudiantes practiquen inglés en entornos inmersivos e interactivos que conecten la enseñanza del aula con situaciones comunicativas de la vida real. Se concluye que la Realidad Virtual puede constituir un recurso complementario valioso para el desarrollo de la expresión oral cuando se integra con objetivos comunicativos claros, tareas estructuradas, orientación docente y retroalimentación adecuada. Se recomienda realizar futuras investigaciones con muestras más amplias, grupos de control e intervenciones de mayor duración para fortalecer la evidencia sobre su efectividad en contextos de enseñanza del inglés como lengua extranjera.

Palabras clave: Realidad Virtual, comunicación oral, inglés como lengua extranjera, habilidades de expresión oral, aprendizaje inmersivo, estudiantes de Bachillerato.

Riassunto

Questo studio ha esaminato l'uso della Realtà Virtuale (RV) come approccio didattico innovativo per promuovere le abilità di comunicazione orale negli studenti del terzo anno di scuola secondaria superiore che apprendono l'inglese come lingua straniera. È stato adottato un disegno quantitativo quasi-sperimentale mediante l'applicazione di un pre-test e di un post-test per valutare i cambiamenti nelle prestazioni orali degli studenti prima e dopo l'implementazione di attività comunicative supportate dalla Realtà Virtuale. La valutazione si è concentrata su cinque dimensioni della comunicazione orale: fluidità, pronuncia, uso del vocabolario, accuratezza grammaticale ed efficacia comunicativa. L'intervento ha incorporato scenari immersivi che simulavano situazioni della vita reale, comprese interazioni in ristoranti, hotel, negozi e altri contesti quotidiani. I dati sono stati elaborati mediante statistiche descrittive utilizzando IBM SPSS Statistics. I risultati hanno mostrato miglioramenti in tutte le dimensioni valutate, con un aumento della media complessiva da 1,64 nel pre-test a 3,53 nel post-test, pari a una differenza di 1,89 punti. I maggiori progressi sono stati osservati nell'efficacia comunicativa e nell'uso contestualizzato del vocabolario. Questi risultati suggeriscono che la Realtà Virtuale può offrire opportunità significative agli studenti per praticare l'inglese in ambienti immersivi e interattivi che collegano l'apprendimento in aula con situazioni comunicative della vita reale. Lo studio conclude che la Realtà Virtuale può rappresentare una risorsa complementare preziosa per lo sviluppo delle abilità orali quando viene integrata con obiettivi comunicativi chiari, attività strutturate, guida dell'insegnante e feedback adeguato. Si raccomanda che future ricerche includano campioni più ampi, gruppi di controllo e interventi di maggiore durata per rafforzare le evidenze relative alla sua efficacia nei contesti di apprendimento dell'inglese come lingua straniera.

Parole chiave: Realtà Virtuale, comunicazione orale, inglese come lingua straniera, abilità orali, apprendimento immersivo, studenti della scuola secondaria superiore

Introduction

Oral communication is a fundamental component of foreign language competence because it enables learners to transform linguistic knowledge into meaningful interaction. For young learners of English as a Foreign Language (EFL), developing speaking skills involves considerably more than memorizing vocabulary or grammatical structures. Learners must simultaneously retrieve appropriate language, pronounce words intelligibly, organize ideas, respond to interlocutors, and maintain sufficient confidence to communicate. Providing opportunities for meaningful oral interaction is therefore particularly important during the early stages of language learning. Nevertheless, in many EFL contexts, students have limited

opportunities to use English beyond the classroom, making it difficult for them to transfer linguistic knowledge to authentic communicative situations. Research on technology-mediated language learning has consequently emphasized the importance of creating environments in which learners can practice spoken language through contextualized, interactive, and purposeful activities (Sun et al., 2017; Wu & Hung, 2022).

One of the principal challenges in developing oral communication among young EFL learners is the limited amount of authentic interaction available during traditional classroom instruction. Speaking activities are frequently constrained by class size, instructional time, learners' proficiency levels, and the artificial nature of textbook-based situations. Students may understand how particular expressions are used but still experience difficulty applying them when participating in spontaneous communication. Furthermore, speaking in a foreign language can generate anxiety, particularly when learners are concerned about pronunciation, grammatical errors, or negative evaluation. These affective factors may reduce learners' willingness to participate and, consequently, restrict the amount of meaningful oral practice they receive. In this respect, willingness to communicate has been recognized as an important factor influencing whether learners actually use the target language when opportunities for interaction arise.

The growing integration of digital technologies into language education has created new possibilities for addressing these limitations. Among emerging educational technologies, Virtual Reality (VR) has attracted considerable attention because of its capacity to place learners within simulated environments that can reproduce situations that would otherwise be difficult to experience inside a conventional classroom. VR-assisted language learning can range from relatively simple 360-degree environments to highly immersive experiences involving head-mounted displays and interactive virtual spaces. Rather than presenting language as isolated linguistic content, these environments can connect vocabulary and expressions with visual, spatial, and situational information, allowing learners to experience language within meaningful contexts. Lan (2020) characterizes VR-supported foreign language learning in terms of immersion, interaction, and experience-oriented learning, suggesting that its pedagogical value

derives not merely from technological novelty but from the type of experiences it enables learners to undertake.

These characteristics are particularly relevant to oral communication. A virtual environment can simulate communicative contexts such as ordering food in a restaurant, asking for assistance in a store, interacting at a hotel reception desk, visiting a museum, requesting directions, or introducing oneself in a social situation. Within such environments, learners can associate spoken expressions with objects, places, actions, and communicative intentions. Consequently, VR can potentially reduce the distance between classroom language practice and real-world language use. Yuditseva's (2023) review of 34 studies addressing VR and English oral communication identified immersion, interaction, feedback, and creation as central affordances of virtual environments. The review also found generally positive relationships between VR-assisted learning and variables such as motivation, confidence, willingness to communicate, cultural awareness, and reduced anxiety. However, the author cautioned that evidence regarding direct improvements in oral fluency remained inconclusive.

Empirical research has nevertheless provided encouraging evidence regarding the application of VR with younger language learners. Wu and Hung (2022), for example, investigated VR-infused English instruction among 56 sixth-grade EFL learners. Students in the experimental group participated in a virtual museum experience using VR headsets, whereas the comparison group completed instruction based on pictures. The researchers assessed pronunciation, fluency, intonation, grammatical performance, lexical use, willingness to communicate, and learner autonomy. Their findings indicated that VR-supported instruction significantly improved students' grammatical and lexical performance in speaking, although significant differences were not observed in pronunciation, fluency, intonation, willingness to communicate, or learner autonomy. These results are important because they demonstrate both the potential and the limitations of VR: exposure to immersive environments alone does not automatically improve every dimension of speaking performance.

Other studies have similarly demonstrated that the pedagogical design surrounding VR is crucial. Chien et al. (2020) examined spherical video-based VR combined with peer assessment

and reported positive effects on EFL learners' speaking performance and learning perceptions. Similarly, Ebadi and Ebadijalal (2020) explored Google Expeditions VR in relation to oral proficiency and willingness to communicate, while Xie et al. (2019) investigated mobile-assisted VR and Chinese second-language learners' oral proficiency. Collectively, such studies suggest that VR may be most effective when immersive experiences are accompanied by structured communicative tasks, opportunities for interaction, feedback, reflection, or collaborative learning rather than being used simply as an audiovisual presentation tool.

Affective dimensions are another important consideration in VR-supported speaking instruction. Foreign language speaking anxiety can prevent learners from participating even when they possess sufficient linguistic knowledge to communicate. Virtual environments may provide a psychologically safer space in which students can rehearse communication without some of the social pressure associated with direct classroom performance. Ding (2024), in a mixed-method investigation involving 140 Chinese EFL learners, examined the relationship between high-immersion VR and foreign language speaking anxiety. Participants frequently perceived the VR environment as authentic and enjoyable, and the immersive learning experiences encouraged engagement, although certain features such as avatar-mediated interaction occasionally created communication difficulties. The study highlights the potential of VR to influence not only linguistic performance but also the emotional conditions under which language learning occurs.

This affective potential is supported by broader evidence. Yu and Duan's (2024) meta-analytic investigation of VR-assisted language education examined outcomes including anxiety, motivation, performance, satisfaction, and self-efficacy. Their analysis reflects growing interest in understanding VR as more than a tool for delivering linguistic content, emphasizing instead its relationship with learners' emotional and motivational experiences. Such factors are particularly significant for younger learners, whose willingness to speak can be strongly influenced by confidence, engagement, perceived difficulty, and classroom atmosphere.

At the same time, the literature indicates that VR should not be interpreted as inherently superior to conventional teaching. A review specifically examining oral communication found

that technological difficulties, excessive cognitive demands, motion sickness, accessibility issues, and inadequately designed learning activities can limit learning outcomes (Yudintseva, 2023). Likewise, studies comparing VR-supported instruction with more traditional approaches have occasionally reported nonsignificant differences in oral proficiency despite positive learner perceptions. Such findings reinforce the principle that technology itself does not produce learning; rather, learning outcomes depend on how technological affordances are aligned with instructional objectives and communicative tasks.

Recent evidence from school-level research further emphasizes the need for cautious interpretation. Sun and Song's systematic review of randomized controlled trials involving K–12 foreign-language learners concluded that immersive VR generally demonstrated promising effects compared with non-VR instruction, particularly in vocabulary, listening, and long-term retention. However, the authors also identified considerable heterogeneity among interventions and methodological concerns within the existing evidence base, preventing broad conclusions regarding the effectiveness of VR across all language skills and contexts. Importantly, they noted the limited quantity of rigorous experimental research involving school-aged foreign-language learners. This limitation is especially relevant to oral communication because much of the existing VR language-learning literature continues to involve university students rather than children or young adolescents.

Consequently, a significant research need remains regarding the systematic integration of VR into speaking instruction for young English learners. Although previous research suggests that immersive environments may promote engagement, contextualized learning, confidence, and certain dimensions of speaking performance, findings regarding oral fluency and broader communicative competence remain mixed. Furthermore, comparatively fewer studies have examined how young learners perform when VR is incorporated into structured communicative scenarios designed specifically to encourage meaningful spoken interaction. The distinction is important because successful oral communication involves not only linguistic accuracy but also the ability to use language appropriately and confidently within contextualized situations.

Against this background, the present study explores Virtual Reality as an innovative approach for fostering oral communication skills among young English learners. Rather than conceptualizing VR merely as an engaging technological resource, the study considers it as an immersive learning environment through which students can encounter simulated real-life situations and practice English for communicative purposes. By examining learners' oral communication within VR-supported activities, the research seeks to contribute empirical evidence regarding the potential of immersive technology to provide contextualized speaking opportunities for young EFL learners. In doing so, the study responds to the continuing need for research that connects technological innovation with pedagogically meaningful language use and evaluates whether immersive experiences can help young learners move from knowing English to actively using English for communication.

METHODOLOGY

Participants

The participants were students enrolled in the third year of Baccalaureate at a secondary educational institution. The learners were studying English as a foreign language as part of their regular academic curriculum and represented a relatively homogeneous group in terms of educational level and exposure to formal English instruction.

Participants were selected through convenience sampling because the intervention was implemented with an existing classroom group available to the researchers. All students received regular English instruction before the study and had previous experience with classroom activities involving vocabulary, grammar, reading, listening, and basic oral interaction.

The participants were informed about the purpose and procedures of the study before the intervention. Their participation in the research activities was handled according to ethical principles of educational research, including confidentiality, voluntary participation, and the protection of students' personal information. The results obtained through the oral assessments were used exclusively for research purposes.

Instruments

Three main instruments were employed to collect data: an oral communication pre-test, an oral communication post-test, and an analytical speaking rubric.

The **oral communication pre-test** was administered before the implementation of the VR intervention. Its purpose was to identify students' initial speaking performance and establish a baseline for subsequent comparison. The assessment included communicative tasks in which students were required to respond to questions, describe situations, and participate in short simulated interactions related to everyday contexts.

The oral communication post-test was administered after the completion of the intervention. It followed a structure comparable to that of the pre-test and evaluated the same dimensions of oral communication. This allowed the researchers to determine whether changes had occurred in students' speaking performance following exposure to VR-supported activities. An analytical speaking rubric was used to evaluate students' oral production in both assessments. The rubric included key dimensions associated with oral communication, such as fluency, pronunciation, vocabulary use, grammatical accuracy, and communicative effectiveness. Each dimension was scored according to predefined performance descriptors to increase consistency and objectivity during the assessment process.

Additionally, observational notes were collected during the implementation of the VR activities. These notes provided complementary information about student participation, engagement, interaction, confidence, and difficulties experienced while completing the communicative tasks.

Design and Procedure

The study followed a quasi-experimental pre-test–intervention–post-test design and was implemented with students from the third year of Baccalaureate during their regular English classes. The procedure was organized into three main stages: initial assessment, VR-supported intervention, and final assessment.

During the first stage, students completed the oral communication pre-test. Each participant performed a series of speaking tasks designed to assess their initial ability to communicate in English. Their oral production was evaluated using the analytical rubric, which

measured fluency, pronunciation, vocabulary, grammatical accuracy, and communicative effectiveness. The results of this stage established the baseline against which post-intervention performance was compared.

During the second stage, students participated in a sequence of VR-supported English lessons. Virtual Reality environments were incorporated into communicative activities that simulated authentic or semi-authentic situations in which English could naturally be used. These situations included scenarios such as interacting at a hotel reception desk, ordering food in a restaurant, asking for information, purchasing products, giving directions, introducing oneself, and participating in everyday social exchanges.

Before entering each virtual environment, the teacher introduced the communicative objective of the activity and reviewed relevant vocabulary, expressions, and language structures. Students were then given time to explore the virtual scenario and complete specific speaking tasks. Depending on the activity, learners interacted with classmates, responded to prompts, performed role-plays, described what they observed, or produced short dialogues related to the situation presented through VR.

The instructional sequence followed a communicative approach. Students were encouraged to focus primarily on conveying meaning rather than producing completely error-free sentences. The teacher acted as a facilitator by monitoring interactions, providing guidance when necessary, and offering corrective feedback after the communicative activities rather than continuously interrupting students during their oral production.

The VR activities were integrated progressively so that learners first became familiar with the technological equipment before completing more demanding communicative tasks. This familiarization stage was important to minimize possible distractions related to the use of head-mounted displays and allow students to focus on the language-learning objectives of the intervention.

During the final stage, the oral communication post-test was administered. Students completed speaking tasks comparable in difficulty and structure to those included in the initial assessment. Their performance was evaluated using the same analytical rubric employed in the

pre-test. The scores obtained before and after the intervention were subsequently compared to determine whether the integration of Virtual Reality was associated with improvements in students’ oral communication skills.

The overall procedure was designed to ensure that Virtual Reality functioned as a pedagogical environment for meaningful language use rather than merely as an entertainment or visualization tool. By placing third-year Baccalaureate students in simulated communicative contexts, the intervention sought to increase opportunities for contextualized speaking practice and encourage learners to use English more actively and confidently.

Results

The data obtained from the pre-test and post-test were processed and analyzed using IBM SPSS Statistics. Descriptive statistics were calculated to determine the mean oral communication performance of the participants before and after the implementation of the Virtual Reality-based English instructional intervention. The assessment focused on five main dimensions of oral communication: fluency, pronunciation, vocabulary use, grammatical accuracy, and communicative effectiveness. A four-point performance scale was used, in which 1 represented the initial level, 2 the developing level, 3 the satisfactory level, and 4 the outstanding level. Mean scores were calculated for each evaluation criterion, and an overall oral communication mean was obtained for both the pre-test and post-test. The difference between the two measurements was also calculated to determine the magnitude of change observed after the VR-supported instructional intervention.

Table 1
Pre-test and Post-test Results for English Oral Communication Skills

Evaluation Criteria	Pre-test Mean	Post-test Mean
<i>Speaking with appropriate fluency and continuity</i>	1.64	3.48
<i>Producing English words with intelligible pronunciation</i>	1.72	3.51
<i>Using appropriate vocabulary and expressions in communicative situations</i>	1.67	3.62

<i>Using grammatical structures accurately during oral interaction</i>	1.58	3.43
<i>Communicating ideas and responding effectively during interactions</i>	1.61	3.59
<i>Overall Oral Communication Mean</i>	1.64	3.53

Authors' elaboration based on the results obtained from the pre-test and post-test.

Table 1 presents the descriptive comparison between the pre-test and post-test results for the five criteria used to assess the students' English oral communication skills. The findings show a consistent increase in mean scores across all evaluation criteria after the implementation of the Virtual Reality-based instructional intervention. Pre-test mean scores ranged from 1.58 to 1.72, indicating that the participants initially demonstrated oral communication performance predominantly between the initial and developing levels. In contrast, post-test mean scores ranged from 3.43 to 3.62, positioning the participants primarily between the satisfactory and outstanding performance levels.

The greatest improvement was observed in communicating ideas and responding effectively during interactions, which increased from a pre-test mean of 1.61 to a post-test mean of 3.59, representing a difference of 1.98 points. This result suggests that the simulated communicative situations provided through Virtual Reality may have contributed to students' ability to respond more effectively and maintain oral exchanges in English. The second-largest increase was identified in using appropriate vocabulary and expressions in communicative situations, which improved from 1.67 to 3.62, producing a difference of 1.95 points. This criterion also obtained the highest post-test mean, suggesting that contextualized VR scenarios supported students in selecting and applying vocabulary according to specific communicative situations.

Improvements were also observed in grammatical accuracy. The mean score for using grammatical structures accurately during oral interaction increased from 1.58 in the pre-test to 3.43 in the post-test, representing a difference of 1.85 points. Although this criterion obtained the

lowest post-test mean among the five dimensions, the magnitude of improvement indicates considerable progress in the students' ability to construct grammatically appropriate utterances while communicating orally.

Similarly, speaking with appropriate fluency and continuity increased from a mean of 1.64 to 3.48, resulting in an improvement of 1.84 points. This finding indicates that after participating in the VR-supported activities, students were able to produce oral responses with fewer interruptions and greater continuity. The simulated real-life situations provided repeated opportunities to speak English for specific purposes, which may have facilitated more spontaneous oral production.

Regarding pronunciation, the pre-test mean of 1.72 increased to 3.51 in the post-test, resulting in a difference of 1.79 points. Although pronunciation showed the smallest numerical increase among the assessed criteria, the results still demonstrate substantial progress. Furthermore, pronunciation presented the highest initial mean, suggesting that students had a slightly stronger starting performance in this area compared with the other dimensions of oral communication.

Considering all five criteria together, the overall oral communication mean increased from 1.64 in the pre-test to 3.53 in the post-test, representing an overall difference of 1.89 points. This shift reflects a transition from an initial/developing level of oral performance before the intervention to a predominantly satisfactory/outstanding level after the intervention.

Overall, the descriptive results demonstrate improvement across every dimension of oral communication assessed in the study. The most pronounced gains were associated with communicative effectiveness and the contextualized use of vocabulary, while substantial increases were also recorded in fluency, grammatical accuracy, and pronunciation. These findings indicate that the incorporation of Virtual Reality into English instruction was associated with higher levels of oral communication performance among third-year Baccalaureate students after the instructional intervention.

Discussion

The findings of this study suggest that the integration of Virtual Reality into English language instruction was associated with substantial improvement in the oral communication performance of third-year Baccalaureate students. The overall mean increased from 1.64 in the pre-test to 3.53 in the post-test, representing a difference of 1.89 points. Improvements were observed across all five assessed dimensions: fluency, pronunciation, vocabulary use, grammatical accuracy, and communicative effectiveness. These results support the growing body of research indicating that immersive environments can provide meaningful opportunities for learners to practice spoken English in contextualized situations rather than limiting oral production to decontextualized classroom exercises.

The largest improvement was observed in communicative effectiveness, which increased by 1.98 points. This finding is particularly relevant because effective oral communication requires learners to do more than produce grammatically correct sentences. Students must understand the communicative situation, select appropriate language, respond to an interlocutor, and sustain interaction. The VR activities implemented in this study exposed learners to simulated situations such as hotel interactions, restaurant exchanges, asking for information, purchasing products, and other everyday communicative scenarios. These environments may have provided a clearer communicative purpose for language use and encouraged students to respond more spontaneously. Similar findings were reported by Ebadi and Ebadijalal (2022), whose investigation of Google Expeditions showed that learners exposed to VR significantly improved their oral proficiency and demonstrated greater willingness to communicate than students receiving conventional instruction. Their results also indicated positive learner perceptions regarding motivation, confidence, enthusiasm, and engagement with oral activities.

The improvement in communicative effectiveness can also be interpreted in relation to the immersive and contextual characteristics of VR. Unlike traditional speaking exercises in which learners may be asked to imagine a situation, virtual environments provide visual and spatial contextual cues that help establish the purpose and setting of communication. Yudintseva (2023), in a review of 34 studies on VR-supported oral communication, identified immersion, interaction, feedback, and creation as important affordances of VR for language learning. The

review found that these characteristics were frequently associated with increased motivation, confidence, willingness to communicate, and reduced anxiety. The results of the present study are consistent with this perspective because students demonstrated their greatest progress in the criterion most directly related to using language for meaningful interaction.

Vocabulary use represented the second-largest improvement, increasing from 1.67 to 3.62, with a difference of 1.95 points. It also obtained the highest post-test mean among the five assessed dimensions. One possible explanation is that VR environments provided students with contextual cues that facilitated the connection between vocabulary and specific communicative situations. Instead of learning lexical items as isolated words, students encountered and used them while completing tasks situated within recognizable environments. For instance, vocabulary associated with hotels, restaurants, shopping, locations, and social exchanges could be immediately connected to visual elements and communicative purposes within the virtual scenario.

This finding is compatible with the broader literature on VR-assisted language learning, which has emphasized the potential of immersive environments to promote contextualized vocabulary acquisition. Hua and Wang (2023), in their review of empirical research on VR-assisted language learning published between 2018 and 2022, found that VR has increasingly been associated with both cognitive and affective benefits in foreign language education. Their review indicates that virtual environments can provide learners with multimodal experiences in which linguistic information is associated with meaningful contexts and learner actions. In the present study, the strong improvement in vocabulary use suggests that this contextualization may have helped learners retrieve appropriate expressions more effectively during oral communication.

Grammatical accuracy also demonstrated considerable improvement, increasing from 1.58 in the pre-test to 3.43 in the post-test. Interestingly, grammatical accuracy represented the lowest initial mean and remained the lowest post-test mean, despite an improvement of 1.85 points. This pattern suggests that grammar may remain a relatively demanding component of

spontaneous oral communication even when learners become more confident and effective speakers. During real-time communication, learners must simultaneously formulate ideas, retrieve vocabulary, pronounce words, monitor their interlocutor, and apply grammatical rules. Consequently, grammatical accuracy may require a longer period of practice to reach the same level of development as vocabulary or communicative responsiveness.

The improvement in grammatical performance is consistent with the findings of Wu and Hung (2022), who examined VR-infused instruction among elementary EFL students. Their results indicated significant improvement in certain aspects of English-speaking performance, particularly grammatical and lexical performance, among learners exposed to VR-supported instruction. However, the researchers did not find significant differences in all speaking dimensions, including fluency and pronunciation. This comparison is important because it suggests that different dimensions of oral proficiency may respond differently to VR-based interventions. The present findings similarly indicate that although all assessed dimensions improved, the magnitude of improvement varied according to the linguistic or communicative component being evaluated.

Fluency increased from 1.64 to 3.48, representing a difference of 1.84 points. This result suggests that repeated exposure to contextualized speaking situations may have helped students produce English with greater continuity and fewer interruptions. Because the VR activities required learners to respond to scenarios rather than simply reproduce memorized sentences, students were encouraged to retrieve language under conditions that more closely resembled spontaneous communication. Repetition of communicative patterns across different scenarios may also have increased automaticity in language production.

Nevertheless, the improvement in fluency should be interpreted cautiously. Yuditseva (2023) concluded that although VR research generally reports positive affective and communicative outcomes, evidence concerning direct improvements in oral fluency remains inconclusive. This discrepancy illustrates the importance of pedagogical design. VR itself may not automatically improve fluency; rather, its effectiveness appears to depend on the types of

speaking tasks students perform, the amount of oral production required, the feedback provided, and the degree to which learners actively interact with the environment. In the present intervention, VR was incorporated into structured communicative tasks, which may explain why improvement in fluency was observed.

Pronunciation showed the smallest numerical improvement, although the increase remained substantial, moving from 1.72 to 3.51, with a difference of 1.79 points. The relatively smaller gain may partly be explained by the fact that pronunciation already presented the highest pre-test mean. Students therefore had less room for improvement compared with criteria such as grammatical accuracy or communicative effectiveness. Additionally, pronunciation development frequently requires explicit phonological feedback, repeated auditory modeling, and focused practice, elements that may not be provided automatically by an immersive environment. VR may create opportunities to speak, but improvements in pronunciation still depend greatly on the quality of linguistic input and corrective feedback incorporated into the instructional design.

Beyond linguistic performance, the results may also reflect the affective benefits associated with immersive learning environments. Speaking in a foreign language frequently produces anxiety because learners are required to perform publicly while simultaneously monitoring their linguistic accuracy. VR can potentially reduce some of this pressure by allowing students to practice within simulated environments before facing equivalent real-world situations. Ding (2024) found that high-immersion VR environments were generally perceived as authentic and enjoyable by EFL learners and could contribute to engagement with speaking activities. The study also emphasized that the relationship between VR and speaking anxiety is influenced by instructional design and the particular characteristics of virtual interaction.

The possible relationship between reduced anxiety and improved oral performance deserves particular consideration. Students who feel more comfortable participating may speak more frequently, take greater linguistic risks, and be less concerned about making errors. Greater participation subsequently creates additional opportunities for practice. Recent research comparing different levels of VR immersion has similarly reported reductions in speaking

anxiety and increases in learners' self-confidence after participation in virtual communication tasks, although the degree of immersion itself did not necessarily determine willingness to communicate. These findings indicate that the value of VR may lie partly in its capacity to create supportive environments for rehearsal and experimentation rather than exclusively in its technological sophistication.

At the same time, the present results should not be interpreted as evidence that Virtual Reality is inherently superior to all conventional approaches to language teaching. Previous research has produced mixed findings. For example, studies of VR-supported EFL speaking have sometimes reported positive learner perceptions and reduced anxiety without finding statistically significant differences in oral proficiency between VR and conventional instructional groups. Yuditseva (2023) similarly identified cognitive load, technological difficulties, motion sickness, accessibility concerns, and poorly aligned instructional activities as factors that can limit the effectiveness of VR-assisted language learning. Consequently, the pedagogical value of VR depends considerably on how the technology is integrated into instruction.

The findings of the present study therefore reinforce the importance of treating VR as a pedagogical environment rather than as an isolated technological innovation. The gains observed after the intervention were likely related not only to immersion itself but also to the structured sequence of pre-task preparation, contextualized speaking practice, interaction, and teacher feedback incorporated into the lessons. This interpretation is consistent with recent research suggesting that task design and instructional methodology may have a greater influence on communication outcomes than the level of technological immersion alone.

From a pedagogical perspective, the results have important implications for English instruction at the Baccalaureate level. Students studying English in EFL environments may have relatively few opportunities to participate in authentic English-speaking situations outside the classroom. VR can partially address this limitation by allowing teachers to simulate communicative contexts that would otherwise be difficult, expensive, or impractical to reproduce. A classroom can therefore become a hotel reception area, restaurant, store, tourist

destination, or other setting in which students are required to use English for a recognizable communicative purpose.

However, effective implementation requires purposeful instructional planning. Teachers should establish clear language objectives before using a virtual environment, introduce the vocabulary and expressions necessary for the task, provide opportunities for repeated oral production, and include feedback following the activity. Learners should also be gradually familiarized with the technological equipment so that attention is directed toward communication rather than device operation. These considerations are especially relevant for younger learners and secondary school students, for whom technological novelty can initially become a distraction.

Overall, the results of this study are consistent with much of the emerging literature suggesting that Virtual Reality can contribute positively to foreign language oral communication when it is combined with appropriately designed communicative instruction. The substantial increase from an overall pre-test mean of 1.64 to a post-test mean of 3.53 indicates that participants performed at higher levels across all evaluated oral communication dimensions after the intervention. Particularly strong improvements in communicative effectiveness and vocabulary use suggest that VR may be especially valuable for helping learners connect linguistic knowledge with meaningful situations of language use.

Nevertheless, because the present study used a quasi-experimental design and relied primarily on pre-test and post-test comparisons, the results should be interpreted as evidence of improvement associated with the intervention rather than definitive proof that VR alone caused the observed gains. Future research should incorporate control groups, larger samples, longer interventions, and inferential statistical analyses to determine the strength and generalizability of the effect. It would also be valuable to examine variables such as speaking anxiety, willingness to communicate, motivation, learner perceptions, and long-term retention. Such research could provide a more comprehensive understanding of how and under what pedagogical conditions

Virtual Reality can most effectively support oral communication development among young EFL learners.

Conclusions

The implementation of Virtual Reality-based instruction was associated with substantial improvement in the oral communication skills of third-year Baccalaureate students. The increase in the overall mean from 1.64 in the pre-test to 3.53 in the post-test indicates positive development across fluency, pronunciation, vocabulary use, grammatical accuracy, and communicative effectiveness. The strongest gains were observed in communicative effectiveness and contextualized vocabulary use, suggesting that immersive environments can support students in applying English more meaningfully in simulated real-life situations.

Virtual Reality proved to be a valuable pedagogical resource when integrated with structured communicative activities rather than used only as a technological tool. The findings suggest that VR can provide learners with opportunities to practice English in contextualized, interactive, and engaging environments that may be difficult to recreate in a traditional classroom. However, the effectiveness of this approach depends on appropriate instructional planning, clear communicative objectives, teacher guidance, and feedback. Future studies should include larger samples, control groups, and longer interventions to further examine the impact of VR on oral communication development.

The results also highlight the potential of Virtual Reality to reduce the gap between classroom-based language learning and authentic communication. By placing students in simulated everyday contexts, VR encouraged the practical use of English for specific communicative purposes and promoted more active participation in speaking tasks. This approach can be particularly beneficial in EFL contexts where learners have limited opportunities to interact in English outside the classroom, making immersive technology a promising complement to conventional oral communication instruction.

Implications

The findings of this study have important pedagogical implications for English language teaching at the Baccalaureate level. Virtual Reality can be incorporated as a complementary instructional resource to increase opportunities for contextualized oral practice, particularly in EFL settings where students have limited exposure to authentic English-speaking environments. Teachers can use immersive scenarios to simulate everyday communicative situations and encourage learners to apply vocabulary, grammatical structures, and speaking strategies for meaningful purposes rather than practicing language only through isolated classroom exercises.

The results also suggest that the effectiveness of VR depends largely on instructional design. Virtual environments should be connected to clearly defined communicative objectives, appropriate pre-task preparation, guided interaction, and post-task feedback. Teacher training is therefore essential to ensure that VR is used as a pedagogical tool rather than as a purely technological or motivational resource. Schools considering its implementation should also address accessibility, equipment availability, technical support, and students' gradual familiarization with immersive devices.

At the curricular level, VR-supported speaking activities could be integrated into units related to real-life communication, such as tourism, restaurants, shopping, travel, social interaction, and professional contexts. This would allow students to rehearse language in realistic settings before applying it outside the classroom. Furthermore, the positive changes observed across the assessed oral communication dimensions suggest that educational institutions may consider immersive technologies as part of broader strategies for strengthening communicative competence and promoting more active, experiential forms of foreign language learning.

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