Computer Assisted Language Learning Electronic Journal (CALL-EJ), 25(2), 152-172. 2024

Virtual Reality: A Virtual World to Realize English as a Lingua Franca and Enhance Students' Self–Efficacy

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Abstract

This study explores the impact of Virtual Reality (VR) tools on students' English self-efficacy and listening self-efficacy in an English as a Lingua Franca (ELF) context. VR platforms provide a virtual environment for learners to interact with diverse English speakers, which is crucial for students in countries where English is not an official language. Conducted over ten weeks with 74 first-year students at a university in Ho Chi Minh City, Vietnam, this mixed-methods study used English self-efficacy questionnaires, English listening self-efficacy questionnaires, and focus group interviews as research instruments. Two questionnaires helped compare self-efficacy levels between students using VR and those who did not. The interviews revealed students' attitudes towards VR and the challenges they faced. The findings indicated that VR significantly enhances students' English self-efficacy and listening self-efficacy. Most students were excited about communicating with various interlocutors from different regions, which improved their self-efficacy. The study highlights the perceived benefits of VR on students' listening efficacy and the obstacles that teachers and learners may encounter. Ultimately, the research offers pedagogical implications for implementing ELF, emphasizing the importance of VR in providing exposure to diverse English varieties and enhancing language learning outcomes.

Keywords: Virtual reality, self-efficacy, listening skills, English as a lingua franca, technology in English teaching

Introduction

English is a global language widely used for communication, education, business, and entertainment (Crystal, 2003). However, learning English as a foreign language (EFL) can be challenging, especially regarding listening skills. Among the millions of English learners worldwide, Vietnamese students need help studying English and listening in their contexts. These problems include mispronunciation and omission of final sounds, high speech rates and challenging vocabulary, long utterances, complex sentences, implied meanings and unfamiliar topics, and lack of exposure and practice (Do & Nguyen, 2021; Dunsmore, 2019; Tran & Duong, 2020). These problems can affect their listening comprehension and speaking fluency, as well as their motivation and confidence in using English. Therefore, it is crucial to explore the causes and solutions of these problems and to find effective ways to enhance their English listening skills.

One major issue is the mispronunciation and omission of final sounds. Vietnamese students often mispronounce English sounds not present in their native language, such as /θ/, /ð/, /z/, /v/, and /w/. For instance, they might say "tink" instead of "think" or "dis" instead of "this." They also tend to omit final consonant sounds, leading to misunderstandings such as hearing "she" instead of "sheep" or "cat" instead of "catch." These errors impact their intelligibility and comprehension in English (Dunsmore, 2019). High speech rates and challenging vocabulary also pose problems. Vietnamese students often struggle to follow native speakers, especially when they babble or use unfamiliar words. They may confuse words with similar sounds or multiple meanings, such as "fifteen" and "fifty" or "bank" and "date." These challenges hinder their listening comprehension and speaking fluency (Tran & Duong, 2020).

Additionally, long utterances and complex sentences can be problematic. Vietnamese students may have difficulty understanding sentences with multiple clauses, modifiers, or connectors. They might struggle to identify the main idea or the logical structure of sentences like 'The man who lives next door to me works at the bank across the street from the supermarket where I usually buy groceries' (Tran & Duong, 2020). Implied meanings and unfamiliar topics further complicate listening comprehension. Vietnamese students may find it hard to infer implied meanings or intentions, primarily when idioms, metaphors, sarcasm, or humor are used. They may not understand expressions like 'break a leg' or 'piece of cake' and might lack the background knowledge to grasp conversations about American history, politics, sports, or entertainment (Tran & Duong, 2020). Lastly, the lack of exposure and practice is a significant barrier. Vietnamese students often have limited opportunities to use English outside the classroom or to interact with native speakers and authentic materials. Psychological barriers such as anxiety, shyness, or lack of confidence also affect their listening and speaking abilities (Tran & Duong, 2020; Do & Nguyen, 2021).

The problems in studying English listening can significantly affect students' self-efficacy, which is defined as the belief in one's ability to perform a specific task or achieve a particular goal (Xu et al., 2021). Mispronunciation and omission of final sounds can lower self-efficacy in listening and speaking due to embarrassment or insecurity about pronunciation and accent, which may lead to difficulties in understanding and being understood by native speakers (Xu et al., 2021). High speech rates and challenging vocabulary can overwhelm and confuse students, reducing their self-efficacy as they struggle to comprehend and learn (Kim et al., 2021). Long utterances and complex sentences can decrease self-efficacy by making it hard to process or produce intricate structures, causing students to lose track of the main ideas and logical connections (Kim et al., 2021). Implied meanings and unfamiliar topics can further diminish self-efficacy if students cannot infer or convey the speakers' intentions due to a lack of background knowledge or cultural awareness (Kim et al., 2021). Lastly, lack of exposure and practice can weaken self-efficacy. Students have fewer opportunities to use English outside the classroom and may face psychological barriers like anxiety, shyness, or lack of confidence (Chen et al., 2022).

Because self-efficacy has been proven to have a positive correlation with English language learning and academic achievements (Fahim & Nasrollahi-Mouziraji, 2013; Jahanian &Mahjoubi, 2013; Zimmerman, 2000), it should be paid much attention to as well as enhanced. Finding a solution to the challenges mentioned earlier is crucial to boost students' self–efficacy in English learning and listening skills in general. However, it is difficult to deal with the challenges mentioned earlier (pronunciation, speed, implied meanings, cultural differences, lengthy and complicated structures, or lack of exposure). Because English status in Vietnam is EFL, not a second or official language, how can students be exposed to or immersed in an authentic target

language environment to become familiar with the target language, solve the problems in listening to English, and develop their self-efficacy?

The recent advancement in technology has offered a potential solution. The problem of only the EFL situation in the Vietnam context can be adjusted and modified with VR technology, such as AltSpace VR or VR Chat, which can provide learners with an ELF environment (English as a Lingua Franca). ELF environment is where interlocutors with different L1 can communicate in English (Genc et al., 2016). Regardless of the physical distance, VR platforms can assure students of authentic communication with various interlocutors worldwide. In other words, by using VR platforms, learners can practice in a virtual but authentic ELF environment. In the ELF context, students can solve the above problems and enhance their English and listening self-efficacy. Therefore, this study explores the effect of using VR platforms on improving students' self-efficacy in English and English listening skills. Specifically, the study answers the following questions: 1. Are there any differences in English self-efficacy and English listening self-efficacy between the VR group and the non-VR group? And, 2. What are the perceived affordances and challenges reported by participants after they experienced VR?

Literature Review

Self-Efficacy

Self-efficacy is part of self-regulation, which involves three phases: forethought, performance, and self-reflection. Self-efficacy falls under the forethought phase, encompassing beliefs that come before learning efforts (Zimmerman & Cleary, 2006). According to social cognitive theory, students possess cognitive abilities to organize, reflect, and regulate their actions based on changes in learning tasks and set their own goals. Self-efficacy is defined as a person's belief in their ability to complete a specific task based on self-assessment of their skills (Bandura, 2006).

Self-efficacy significantly influences motivation, emotions, and behaviors in learning (Bandura, 2006). Students with higher self-efficacy tend to use more cognitive and metacognitive strategies and persist longer when facing challenges than those with lower self-efficacy (Zimmerman & Martinez-Pons, 1990; Eshel & Kohavi,2003; Flavell,1979). Research has shown that students with higher self-efficacy are more persistent when facing difficulties and employ more self-regulated learning strategies while studying English. Additionally, positive correlations have been observed between self-efficacy beliefs, self-regulated learning behaviors, and English language test scores (Pajares, 2009; Anam & Stracke, 2016; Wang et al., 2013). Despite these findings, self-efficacy and self-regulation have been relatively underresearched in ESL/EFL contexts (Wang & Bai, 2017). Therefore, these aspects need further exploration and contribution.

Based on the definition of Bandura (2006), English self-efficacy is the learner's belief in their ability to complete a specific task in English based on self-assessment of their English skills, and listening self-efficacy can be understood as the learner's belief in their ability to complete a specific task in English based on self-assessment of their listening skills. Since Zhu and Gong (2020) suggest that English teaching reforms should focus on developing listening and speaking abilities by providing real-life language experiences and fewer previous studies explore self-efficacy in Listening skills, this current study investigated VR and Listening self-efficacy.

Virtual Reality in English Classrooms

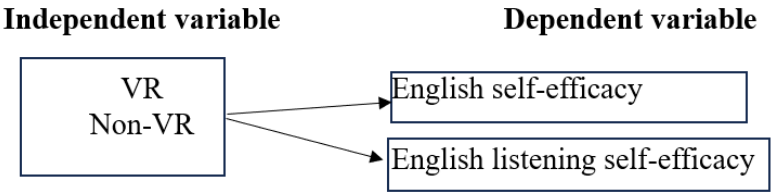
Virtual Reality (VR) is a technology that creates immersive and interactive environments that simulate real or imagined scenarios. VR can be beneficial for language learning because it can provide authentic, contextual, and engaging experiences that can improve learners' motivation, confidence, and communication abilities (Dhimolea et al., 2022; Hua &Wang, 2023; Xie et al., 2022; Virtual Reality Languages, n.d.; Reinders, 2022; Driver, 2020; Smith, 2021; Milgram & Kishino, 1994; Hua & Wang, 2023).

VR is different from Augmented Reality (AR). AR and VR have emerged as helpful educational tools, particularly in language learning. AR enhances the real world with virtual objects, providing visualization and interactive learning experiences (Abad-Segura et al., 2020; Redondo et al., 2020; Radu, 2014; Chen et al., 2022). Conversely, VR immerses users in a virtual environment, allowing them to experience learning in a 3D space (Chang et al., 2020; Kamińska et al., 2019; Shadiev & Yang, 2020). Both technologies have shown positive effects on learning, including improved performance, increased motivation, and collaboration among learners. In language education, AR's contextual visualization, learning interactivity, and VR's visual support and authentic learning opportunities make them promising tools (Bensetti-Benbader & Brown, 2019).

Researchers have categorized the motivation for using VR into intrinsic factors, such as increased enjoyment and motivation, and pedagogical factors, including game-based learning, collaboration, and constructivism (Kavanagh et al., 2017). VR-supported learning in game-based environments is more effective than simulation-based learning (Merchant et al., 2014). Reviews on VR-enhanced language learning have focused on the effectiveness of VR and game-based learning, as well as the research focusing on interactive communication, affective factors, and task-based instruction (Solak & Erdem, 2015; Lin & Lan, 2015). Overall, these reviews have highlighted the positive effects of VR in promoting learning, enhancing students' learning experiences, and improving learning achievement and motivation. However, there is a need for more comprehensive discussions on how VR technologies specifically contribute to promoting language learning in-depth (Huang et al., 2021).

This study used VRChat and AltspaceVR as the primary platforms for students to enter a virtual world using avatars while communicating with real interlocutors from diverse nations and cultures. These two platforms were selected because of their convenience, easy accessibility, and various communicative contexts. Users must create an account and an avatar to access these VR platforms. After that, they can log in and walk around numerous virtual spaces such as a coffee shop, a Japanese temple, under the ocean, a cinema, or in space. VR users can fully immerse themselves in the virtual world with a VR headset, partially immerse themselves, or remain non-immersive by communicating via a computer screen. Users can meet and interact with other users in the same space. These other users are also real people from different countries worldwide. Therefore, VRChat and AltspaceVR can facilitate ELF communication, addressing a challenge in EFL countries that needs tackling. The conceptual framework of the study can be displayed in Figure 1.

Figure 1
The Conceptual Framework of this Study



Research Methodology

Research Design

The mixed-methods research design was employed for this study (Creswell, 2015). The rationale mentioned above matches with this study because the investigation in this study not only tests the effectiveness of VR on self-efficacy but also explores in depth the complexity of students' perceptions and their strategic behaviors during the intervention. The quantitative data can only answer the question about differences in students' self-efficacy levels between the two groups after being taught and practicing on VR platforms. However, the quantitative data cannot describe the students' in-depth experience, thoughts, feelings, perspectives, and strategic behaviors during the intervention. Hence, this study employs a mixed-method approach to obtain a deeper understanding and richer data on the research problem than a single quantitative or qualitative perspective can offer. Besides, the study design gathers quantitative and qualitative data to provide deeper insights and explanations. Integrating both data types facilitates a comprehensive understanding of the research topic.

Participants

The research involved the participation of two intact classes (74 students), where the class was randomly assigned as an experimental group (VR) (37 students), and the second class was assigned to the controlled group (non-VR) (37 students). They were all first-year English-majored students at a university in Ho Chi Minh City, Vietnam. The participants studied English as a compulsory course at the pre-intermediate level. Their ages ranged between 18 and 20 years old, and they were classified as the same English proficiency level based on the placement test. They studied the same syllabus, with the same lecturer and the same textbook. The interviews were conducted with 37 participants in only the VR group.

Research Instruments

Self-efficacy Questionnaires

Two questionnaires were given to two groups (VR and non-VR) after the intervention. There are two self-efficacy questionnaires used in this study: a questionnaire on English self-efficacy (QESE, 32 statements) (Wang et al., 2013) and a questionnaire on English listening self-efficacy (QELSE, 21 statements) (Chen, 2007). While the QESE aimed to explore students' English self-efficacy in general, the QELSE was employed to find self-efficacy in listening skills

(Chen, 2007). These two questionnaires were selected because they were validated in previous research with high internal consistency indexes (Chen, 2007; Wang et al., 2013). Besides, the results from the Listening self-efficacy construct in the QESE and QELSE can foster the claim about the impact of VR on listening self-efficacy.

Regarding the English self-efficacy questionnaire, it was initially designed and validated by Wang et al. (2013). The questionnaire consists of 32 statements to measure overall English self-efficacy in four primary skills: Reading, Listening, Speaking, and Writing. Participants respond on a 7-point Likert's rating scale, ranging from 1 (indicating they cannot do the task at all) to 7 (signifying they can do it very well) (Wang et al., 2013). Concerning the listening self-efficacy questionnaire (Chen, 2007), there are 21 statements with the 10–point Likert's rating scale items, ranging from 1 (not at all sure) to 10 (completely sure).

Focused–group Interviews

For the focus group interviews, the VR group (37 participants) was split into four groups (three groups of 9 people and one group of 10). Four interviews were conducted, each lasting about 30 minutes, with one group interviewed after another on the same day. Responses were documented, reviewed with participants for confirmation, and analyzed using nine guided questions exploring VR usage's perceived benefits and challenges. Here are sample questions for the interview:

1. What were your detailed experiences with VR Chat and AltSpace VR, and what were your expectations?
2. What were your feelings before, during, and after using these VR platforms?
3. What worked and what did not work on VR Chat and AltSpace VR?
4. Why did the problems you described occur?
5. What did you learn from the project, and what would you do differently?
6. How did you solve problems encountered with VR platforms?
7. Did you feel anxious or embarrassed speaking with foreigners before using VR? Describe your difficulties.
8. After using AltSpace VR, do you feel more confident and fluent in English with foreigners?
9. Will you continue using AltSpace VR and VR Chat to improve your English skills, and is it better than offline practice?

Data Analysis

The data set included quantitative (questionnaires) and qualitative (focus group interviews) components. Quantitative data on general and listening English self-efficacy were analyzed using Independent Samples T-tests in IBM SPSS (version 26), with Cohen's d calculating the effect size. Qualitative data were analyzed using Braun & Clarke's (2006) six-step thematic analysis: familiarization, coding, theme searching, theme reviewing, theme defining, and reporting.

Data Collection: Implementing VR Practice

To implement the VR practice, the lesson plans followed the communicative language teaching framework outlined by Littlewood et al. (1981) and Richard (2006). This framework encompasses two phases: pre-communicative and communicative activities. During these phases, students initially received classroom instruction on topics (Home, Food, and Hobbies), followed

by practical application using a VR platform. Students in the VR group were required to create an avatar to enter VR platforms such as VR Chat or AltSpace VR to communicate with foreigners on given topics. Students in the non-VR group received the same instructions in the classroom and practiced communicative tasks with their classmates (non-VR). Details of procedures can be illustrated in Table 1, and some examples of students' products are displayed in Figure 2.

Table 1

The Implementation of the Study in 4 Weeks

Week	Topic	Communicative Language Teaching Framework (Richard, 2006)	
		Pre-communicative activities	**Communicative activities**
0	Pre-VR workshop	Instruct the VR Group on creating an avatar, entering the virtual space, and communicating with foreigners in AltSpace VR and VR Chat.	
1	Home	-Lessons on home descriptions and conversation about home: Words, structures, expressions. -Drills + quasi-communicative activities (both groups).	- VR Group: Communicative task Talk about home with different interlocutors on VR platforms. Record those conversations. - Non-VR Group: Communicative task in the classroom with their classmates.
2	Food	- Lessons on foot descriptions and conversations about food: Words, structures, expressions. - Drills + quasi-communicative activities (both groups).	- VR—Group: Communicative task: Talk about food with different interlocutors on VR platforms and record those conversations. - Non-VR Group: Communicative task in the classroom with their classmates.
3	Hobbies	- Lessons on hobbies, descriptions, and conversations about hobbies: words, structures, expressions. - Drills + quasi-communicative activities (both groups).	- VR—Group: Communicative task: Talk about food with different interlocutors on VR platforms and record those conversations. - Non-VR Group: Communicative tasks in

		the classroom with their classmates.
4	Questionnaires and focus group interview	

Figure 2

Students' Works via VR Platforms, Captured from Students'Video Recordings

Results

Results from English Self-Efficacy Questionnaire

This study investigated differences in English self-efficacy between VR and non-VR groups, each with 37 participants. Data were collected using the QESE by Wang (2013), with a Cronbach alpha of 0.956 indicating high internal consistency. Normality tests (Skewness and Kurtosis) showed a normal data distribution. An independent samples T-test revealed a significant difference in English self-efficacy between the VR group ($M = 5.7821$, $SD = 0.47247$) and the non-VR group ($M = 5.1047$, $SD = 0.71319$), $t(72) = 4.816$, $p = 0.000 < 0.05$, with a large effect size (Cohen's $d = 1.1$).

The study also examined Listening self-efficacy using eight items from Wang et al. (2013). An independent samples T-test showed a significant difference between the VR group ($M = 5.8311$, $SD = 0.46325$) and the non-VR group ($M = 5.2027$, $SD = 0.72490$), $t(72) = 4.443$, $p = 0.000 < 0.05$, with a large effect size (Cohen's $d = 1.033$). These findings confirm the positive impact of VR Chat and AltSpace VR on both English self-efficacy and listening self-efficacy, addressing Research Question 1.

Table 2

The Independent Samples T-Test between The VR and Non-VR Groups in terms of English Self-Efficacy

		Levene's test for equality of variances		T-test for equality of mean						
		F	Sig.	t	df	Sig (2-tailed)	Mean differences	Std. error differences	95% Confidence interval of the difference	
									Lower	Upper
Result	Equal variance assumed	7.111	.009	4.816	72	.000	.67736	.14064	.39700	.95773
	Equal variance not assumed			4.816	62.495	.000	.67736	.14064	.39627	.95846

Table 3

The Independent Samples T-Test between the VR and Non-VR Groups in terms of English Listening Self-Efficacy

		Levene's test for equality of variances		T-test for equality of mean						
		F	Sig.	t	df	Sig (2-tailed)	Mean differences	Std. error differences	95% Confidence interval of the difference	
									Lower	Upper
Result	Equal variance assumed	8.182	.006	4.443	72	.000	.62838	.14143	.34645	.91031
	Equal variance not assumed			4.443	61.201	.000	.62838	.14143	.34559	.91116

Results from the English Listening Self-Efficacy Questionnaire

In addition to exploring English self-efficacy generally with QESE adopted from Wang et al. (2013), the second questionnaire, QELSE, adopted from Chen (2007), was used to investigate whether VR platforms have clear impacts on listening self-efficacy. First, the internal consistency was checked with Cronbach's alpha = 0.975 (high reliability). The descriptive analysis shows a normal data set distribution based on Skewness and Kurtosis tests. Therefore, the independent samples T-test was conducted to determine whether there is a difference in listening self-efficacy

between the VR group (Mean =7.4839, SD =1.30035) and non-VR group (Mean =6.4929, SD =1.39981), t (71.612) =3.155, p =0.002<0.05 (Table 4). The effect size Cohen's d = 0.733533 (high effect). The result indicated a statistically significant difference between the two groups in listening self-efficacy. When the results of English listening self-efficacy from the QELSE by Chen (2007) and the results of the listening self-efficacy construct (from QESE by Wang et al., 2013) are compared, it comes to the same conclusion that employing a VR platform for ELF exposure can significantly enhance English listening self-efficacy, regarding research question 1.

Table 4

Independent Samples T-Test between VR and Non-VR Groups Regarding English Listening Self-Efficacy

		Levene's test for equality of variances		t-test for equality of mean						
		F	Sig.	t	df	Sig (2-tailed)	Mean differences	Std. error differences	95% Confidence interval of the difference	
									Lower	Upper
Result	Equal variance assumed	.657	.420	3.155	72	.002	.99099	.31410	.36484	1.61714
	Equal variance not assumed			3.155	71.612	.002	.99099	.31410	.36479	1.61720

Themes in Focus Group Interview

Interview responses were thematically analyzed using Braun and Clarke's (2006) method. Recurring topics related to the second research question (perceived affordances and challenges with VR experience) were identified as codes and grouped into larger categories and overarching themes. To ensure accuracy, multiple responses from a single participant within a category or theme were counted once, reflecting the total number of participants contributing to each category and theme.

Table 5 presents the thematic analysis results, outlining nine main categories from which two overarching themes emerged related to communication on VR Chat and AltSpace VR. The number of participants providing opinions for each category is noted, and sample responses are provided. The nine categories are: (1) usefulness and enjoyment, (2) skill practice opportunities and friendship-building, (3) increased confidence, (4) cultural and language exposure, (5) perseverance in continuous learning and exploration, (6) Internet connectivity issues and technical glitches, (7) language and communication barriers, (8) negative interactions and inappropriate behaviors, and (9) nervousness and shyness. These categories were classified into two major themes: (1) experience on AltSpace VR and VR Chat: Affordances and (2) experience on AltSpace VR and VR Chat: Challenges.

Table 5
Main Themes and Sample Focus Group Interview Responses

Samples of responses (participants #)	Codes	Categories (# of participants)	Themes
"It's such a fascinating app that I have ever used." (S3)	Fascinating	1. Usefulness and Enjoyment (30)	**Experience on AltSpace VR and VR Chat: Affordances**
"It's a good and helpful app." (S37)	Useful, good		
"I really enjoyed this experience." (S4)	Enjoyable		
"I think it is a good app to practice English skills or make new foreign friends." (S7)	Useful, good		
"I felt delighted using the platform to connect with friends and people worldwide." (S20)	Delighted		
"I have had many opportunities to speak with foreigners and learn new things." (S18)	Useful		
"I think it is a good app to practice English skills or make new foreign friends." (S1)	Skill practice Make friends	2. Skill Practice Opportunities and Friendship Building (35)	
"I have had many opportunities to speak with foreigners and learn new things." (S2)	Speaking skill practice, new knowledge		
"The app is fine... I can meet new people there, and they are interesting and friendly." (S11)	Make friends		
"It helps me communicate in English better and helps me meet many cute foreign friends." (S20)	Skill practice, make friends		
"I've learned how to speak more fluently to foreigners." (S12)	Speaking skill practice		
"I learned to speak English and listen carefully, and I am so happy." (S35)	Skill practice		
"I have learned to speak more confidently in English." (S31)	More confidence		
"I have become less shy and less afraid of making mistakes." (S37)	More confidence		
"...feel more comfortable conversing with native speakers..." (S27)	More confidence		

"After experiencing Alt VR Space, I feel more confident and fluent when I have to speak and listen in English with foreigners." (S26)	More confidence and fluency	3. Increased Confidence (15)	
"I have learned to speak more confidently in English. I was timid. I do not particularly appreciate talking with people that I do not know. Afterward, I feel more confident..." (S31)	More confidence		
"I need to talk with many people in different countries to improve my pronunciation." (S7)	Pronunciation exposure	4. Cultural and Language Exposure (20)	
"I met many foreign friends, such as Indians and Australians, and noticed differences in word choice." (S9)	Vocabulary exposure		
"I had many chances of speaking to foreigners and learning how they spoke." (S25)	Speaking styles exposure		
"I met a few high-quality partners to practice speaking English with them." (S33)	Speaking styles exposure		
"I met people from many countries and asked them some questions for my homework. I asked them about their home definitions and food… There are interesting differences in cultures, I think." (S34)	Language, cultural exposure		
"It helps me connect to different people around the world." (S5)	Cultural exposure		
"I know many dishes from many places and can imagine the beautiful scenery from the description of foreign friends in that game." (S6)	Cultural exposure		
"I can make friends from different countries. We talked about many topics we liked." (S10)	Cultural and language exposure		
"I must talk with many people in different countries to improve my pronunciation. I met many foreign friends, such as Indians and Australians, and learned about their cultures." (S29)	Pronunciation and cultural exposure		

"I will report it to the admin to fix the error." (S11)	Attempts to continue learning	5. Perseverance in Continuous Learning and Exploration (25)	
"I will learn more about how to change clothes, hair color, and how to change style." (S26)	Attempts to explore better non-verbal communication.		
"I'm ready to communicate with my classmates and everyone." (S35)	Attempt to communicate		
"I am willing to talk more in English with my classmates after experiencing VR." (S29)	Attempt to communicate		
"I got confused about how the app works, but then I guess it was quite a fun experience."(S30)	Attempt to continue learning.		
"I couldn't use the AltVR due to my weak device configuration. Later, I could use the VR Chat."(S30)	Configuration problem	1. Internet Connectivity Issues and Technical Glitches (10)	
"I encountered difficulties downloading and using AltVR Space." (S19)	Downloading and operational problem		
"The app was slow and laggy, making it hard to hear clearly during conversations. It took a long time to shut down the software as well." (S20)	Software problem		
"The Alt-VR is quite challenging to use. It is too unnecessarily complicated. VR Chat is better." (S10)	Operational problem		
"Of course, it still has some bugs that annoy me." (S15)	Operational problem		
"…limited features or maps…" (S25)	Feature problem		
"…desire for additional dialogue request and muting options…"(S28)	Feature problem		
"Sometimes, I use it in the evening, but the Internet lags. …login errors and excessive lag in the system." (S32)	Access and Internet connection problem		
"My problem when using the app is that when I want to change the character in my app's clothes and	Operational problem		

hair color, it is complicated to change according to my preference."(S23)			**Experience on AltSpace VR and VR Chat: Challenges**
"...Hard to speak with others…" (S16)	Communication challenge	2. Language and Communication Barriers (13)	
"It isn't easy to understand people speaking fast..." (S17)	Listening and understanding the challenge		
"...language barriers with specific nationalities..." (S27)	Language challenge		
"...unable to catch up with the questions from foreign users..." (S36)	Listening and understanding the challenge		
"My English skills are bad." (S12)	Language challenge		
"I think I am not good at speaking." (S16)	Communication challenge		
"They harassed me verbally and tried to seduce me."(S8)	Verbal harassment	3. Negative Interactions and Inappropriate Behaviors (7)	
"I had nothing to say about good people, but the bad people made me too stunned to speak." (S9)	Bad behavior		
"I kept getting harassed by male users... It is hard to start a conversation there." (S31)	Verbal harassment		
"I met quite a few 'interesting people' whom I would not want to meet again. After that, I was left unsatisfied and disappointed." (S6)	Negative/ Impolite behaviors		
"Troublesome or unpleasant encounters with other users." (S7)	Negative communicative experience		
"...encountering users with dirty words..." (S22)	Negative communicative experience		
"My friend met a strange guy who was a stalker; he always followed her and made her scared. I had to save her, and then we went to find another good person to talk to." (S27)	Negative/ Impolite behaviors		
"I was timid. I don't like talking with people that I don't know. In real life, if someone talks to me first, I will reply to them.	Shy	4. Nervousness and Shyness (6)	

However, now, I know how to make friends, and I think it was kinda cool." (S20)			
"I was embarrassed because my accent was not very good." (S18)	Embarrassed		
"I used to feel anxious when talking with foreigners; I was embarrassed because my accent was not very good." (S21)	Anxious, embarrassed		
"I feel worried that I don't understand and don't know what to say to them."(S22)	Worried		
"I feel anxious and embarrassed when talking with foreigners." (S11)	Anxious, embarrassed		
"I am introverted and have no idea how to strike a not-too-awkward conversation with someone." (S33)	Introverted, shy		

Discussion and Implications for Future Research

The study consistently showed significant differences between the VR and non-VR groups in English self-efficacy, particularly listening self-efficacy. The VR group had higher mean scores, and the high effect size highlighted the notable impact of VR-based language learning on students' English self-efficacy and listening self-efficacy. This finding not only supports Xie, Ryder, and Chen's (2019) and Liaw's (2019) conclusions that VR technology helps improve language skills but also underscores the promising potential of VR in boosting students' self-efficacy. Additionally, it addresses the need for more research on self-efficacy in specific language skills on VR platforms, as mentioned by Genc et al. (2016) and Chen et al. (2022).

Students' perceptions of VR platforms revealed both positive and negative aspects. Positively, VR not only enhanced language skills and confidence but also facilitated cultural exchange. The opportunity to interact with foreigners and improve listening and speaking abilities was particularly appreciated. Most participants enjoyed the experience and appreciated meeting new people, aligning with Xie et al. (2019) and Pack et al. (2020). The user-friendly interface and convenience during the pandemic were also praised. Future research can explore VR's impact on language skills, cultural learning, and the linguistic landscape in VR environments.

Despite the benefits, students encountered various challenges with VR platforms. Technical issues such as app operation, audio lags, and network problems were common. Communication challenges included understanding fast speech and language barriers with specific nationalities. Negative interactions with impolite users were also noted. Importantly, students strongly desired additional features, better face-to-face communication options, and improved dialogue and muting options. This underscores the need for continuous improvement in VR technology. Future studies should investigate online misbehaviors in VR and teach communicative strategies to overcome language barriers, as discussed by Jenkins (2014), Rose and Galloway (2019), and Kasper and Kellerman (2014).

Students learned valuable skills and gained self-efficacy from using VR Chat and AltSpace VR. They improved their communication abilities and cultural knowledge and formed new connections. However, some students faced technical limitations and compatibility issues. To enhance the experience, students suggested better audio quality, graphics, expanded features, and more straightforward instructions. Addressing these areas can make VR a more valuable platform for language learning and cultural exchange.

These insights reflect the perspectives of experienced VR users and provide valuable feedback for improving VR integration in English teaching. Addressing technical issues, enhancing communication features, and ensuring a respectful user environment can improve the effectiveness of VR platforms. Despite some drawbacks, VR platforms offer a promising tool for bringing authentic communication into English classrooms and overcoming limitations in EFL countries. To achieve successful implementation, teachers and researchers should focus on the following points for future research and development:

1. Improving Students' Communication Skills and Language Proficiency

Low English proficiency can hinder students' enjoyment of VR and cause communication breakdowns, affecting self-efficacy. To address this, teachers should focus more on pre-communicative activities within the CLT framework (Richard, 2006). Equipping students with communication strategies in an ELF environment can help prevent communication breakdowns (Jenkins, 2014; Kasper & Kellerman, 2014; Rose & Galloway, 2019). Well-prepared students with appropriate communicative strategies will likely have more enjoyable and successful interactions, boosting their self-efficacy in English, aligning with Schunk (1995) and Bandura (1977).

2. Enhancing Technical Aspects

Technical issues with VR highlight the need for technological training before implementation. Pre-VR workshops on setup, usage, and troubleshooting are essential to prevent frustration and dissatisfaction, which can impact achievement and self-efficacy. Group work can also enhance confidence, as students can share successful communication experiences, support each other, and observe peer models. These practices align with Schunk's (1995) and Bandura's (1977) models of vicarious experience, which influence self-efficacy.

3. Reactions to Negative Verbal Behaviors on VR Platforms

Handling negative or impolite behavior on VR platforms requires thoughtful responses. It is crucial to remain calm, ignore or mute offenders, and report behaviors with evidence. Setting polite boundaries, seeking help from moderators, and leaving negative interactions are recommended. Blocking offenders and, if appropriate, calmly reminding them can also help. Prioritizing safety and involving authorities, if necessary, is vital. Building a supportive community can provide guidance and assistance.

Study Limitations and Future Research

Despite lacking pre-questionnaires, the study found strong support for the positive impact of VR-based language learning on students' English self-efficacy, particularly in listening skills. Focus group interviews reinforced the robustness of the results, and both questionnaires confirmed the VR platforms' impact on listening self-efficacy. The high effect size indicates substantial influence, suggesting that VR technology can significantly enhance students' confidence in their language abilities. Future research should include pre-questionnaires and larger sample sizes to further explore VR-based language learning effectiveness.

Conclusion

In conclusion, the study examined how VR affects students' English self-efficacy and language learning experiences. Using self-efficacy questionnaires and focus group interviews, the research found that VR significantly boosts English self-efficacy compared to traditional methods, corroborating previous studies on VR's positive impact on language skills. However, the lack of pre-intervention self-efficacy measurements is a limitation that future research should address. In terms of affordances and challenges, students' experiences with VR were mixed: some enjoyed the cultural exchange and language improvement opportunities, while others faced technical issues and negative interactions. This highlights the need to tackle technical challenges and ensure a respectful and inclusive VR environment. To improve VR-based language learning, the study recommends: 1. Pre-VR workshops to enhance communication skills and language proficiency, 2. Addressing technical problems and providing clear instructions, 3. Offering group support to reduce frustration and 4. Implementing strategies to manage negative interactions, such as muting/blocking users and fostering a supportive community.

To summarize, VR shows promise for language learning by enhancing cultural exchange, language skills, and self-efficacy. Addressing technical and communicative challenges is crucial for maximizing its benefits. Future research should include pre-test measurements and larger samples to further explore VR's educational potential.

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