Harnessing Virtual Reality: Tackling Foreign Language Anxiety and Elevating Public Speaking Skills

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The Asian Conference on Education & International Development 2024
Official Conference Proceedings

Abstract
This study investigated the efficacy of Virtual Reality (VR) in reducing Foreign Language Anxiety (FLA) and improving public speaking skills in English language learners. Using Oculus Quest 2 headsets, fifteen participants engaged in four two-minute presentation exercises across two sessions in VR environments that varied in audience size and ethnic composition. These settings facilitated interactive presentations, enabling participants to receive feedback from virtual audiences. Findings indicate that while some learners reported a reduction in perceived anxiety and enhancements in presentation skills over time, those with pronounced in-person FLA experienced similar levels of anxiety in VR contexts, suggesting a need for further investigation into these findings. Challenges were noted in preparation, fluency, and anxiety management, although VR also showed potential benefits for rehearsal, confidence building, and refining content delivery. The study emphasizes the importance of avatar customization and audience interaction within VR environments, and highlights the necessity for more refined audience simulations to increase realism. Tailored strategies for addressing FLA are important for maximizing the effectiveness of VR in language learning. This research contributes to the broader discourse on innovative educational approaches, advocating for further exploration into how VR can enhance language learning and alleviate anxiety. Overall, the research underscores VR's promising potential in refining presentation techniques and reducing FLA, paving the way for future investigations into its applications in language education.

Keywords: Virtual Reality (VR), Foreign Language Anxiety (FLA), Public Speaking, English Language Learners, Presentation Skills

Introduction

This study explored how Virtual Reality (VR) could alleviate Foreign Language Anxiety (FLA) and improve public speaking abilities among English language learners. FLA, characterized by apprehension when using a foreign language (MacIntyre & Gregersen, 2012), often impedes effective communication and can significantly hamper language acquisition. Despite the recognized benefits of immersive language experiences (Genesee, 1994), access to such settings, such as living and studying in the target language country, is not always feasible for learners.

VR presents as a promising educational tool by simulating real-life scenarios that can mirror the immersive experience of living abroad. Previous research suggests that VR not only reduces anxiety but also enhances the overall language learning experience (Chollet et al., 2015). This research sought to explore these potentials by investigating whether VR can reduce FLA and improve public speaking capabilities.

The project, an academic collaboration between institutions in Singapore and London during the 2022-2023 academic year, involved the development of an immersive VR experience by a creative technologist, under the supervision of virtual and augmented reality experts. The collaborative nature of the project pooled diverse expertise from the participating institutions, enriching the study's approach and broadening its implications.

The immersive VR experience aimed to give English language learners opportunities to practice public speaking in simulated environments, assessing whether it effectively reduced anxiety and enhanced presentation skills. Student volunteers completed a number of short presentations using Oculus Quest 2 headsets. Data were collected in various forms including head orientation, pre- and post-questionnaires, discussion forums and language assessment of performance.

Furthermore, this study poses further research questions to examine how VR influences FLA and public speaking, providing insights into the practical implications of VR in language education. This involves an exploration of how these technological resources can be fine-tuned to aid language learning, thus adding to current conversations surrounding innovative educational technologies.

Foreign Language Anxiety

The acquisition of a new language extends beyond the rote memorization of vocabulary and verb conjugation, necessitating the overcoming of psychological barriers associated with language use. A predominant barrier is FLA, characterized by MacIntyre and Gregersen as “feelings of worry and negative, fear-related emotions associated with learning or using a language that is not an individual’s mother tongue” (2012, p. 103). FLA commonly manifests during verbal communication, akin to sensations of stage fright or public speaking anxiety, which deter active participation in language communication.

FLA, as described by MacIntyre and Gardner (1994), often stems from a complex interplay of factors, including a fear of negative evaluation, communication apprehension, and self-consciousness. Language learners experiencing FLA may fear making mistakes or being judged negatively by others, leading to heightened anxiety and reluctance to engage in language use. This fear can be exacerbated by communication apprehension, which involves

an individual's dread or anxiety about communicating with others in various social contexts. Additionally, self-consciousness, or the heightened awareness of oneself in social situations, can contribute to FLA by magnifying feelings of insecurity and inadequacy (Kianinezhad, 2024).

To address FLA effectively, MacIntyre & Gregersen (2012) argue that interventions must create environments that offer learners a sense of safety, control, and support for exposure and practice. Educators play an important role in creating supportive and inclusive classroom environments where students feel comfortable expressing themselves without fear of judgment. Positive reinforcement and encouragement can help alleviate anxiety. Additionally, providing opportunities for regular practice and communication in the target language, such as through group discussions, role-plays, and language games, can build confidence and reduce anxiety. Encouraging learners to set achievable goals and celebrating their progress can further mitigate anxiety related to performance expectations. Teaching relaxation techniques like deep breathing, mindfulness, or visualization can help reduce stress and anxiety levels before language learning activities. Furthermore, promoting positive self-talk and replacing negative self-talk with affirmations can boost confidence and reduce anxiety. Lastly, encouraging learners to seek support from teachers, peers, or counselors can provide additional resources and strategies for managing anxiety effectively.

The integration of VR technology in addressing FLA aligns with the overarching objectives of enhancing language learning outcomes and mitigating educational challenges. Research by Alsaffar (2021) supports this proposition by demonstrating the efficacy of VR-based interventions in reducing FLA and improving language learning outcomes. For example, VR environments can simulate real-life language scenarios, such as public speaking engagements, allowing learners to practice in a safe and controlled environment. By providing immersive experiences, VR technology enables learners to confront and overcome their anxiety in a non-judgmental low-stakes environment.

The present study explored the potential of VR to mitigate FLA among English language learners by creating simulated audiences within VR environments to create a controlled, pressure-free setting for language practice. This immersive approach aimed to decrease the anxiety associated with language use and to enhance confidence in public speaking capabilities. Consistent engagement in these low-stakes VR scenarios is posited to facilitate incremental improvements in linguistic proficiency and self-assurance, reflecting the adage that rather than “practice makes perfect” consistent practice leads to better language proficiency (Krashen, 1982).

Factors That Impact FLA Within VR Settings

When examining factors influencing FLA during public speaking, several nuances emerge, particularly within the context of VR environments. VR, while offering myriad advantages, introduces complexities that warrant investigation. One such factor is the composition of the virtual audience, including its size and ethnicity, which has been identified as a significant determinant of users' experiences. Mostajeran and colleagues used VR scenarios where audience numbers ranged from three to fifteen virtual characters. They found that study participants reported experiencing greater stress levels with smaller audience sizes (2020).

Another consideration in VR-mediated communication is ‘social presence’, a concept articulated by Short and colleagues (1976). Social presence encompasses emotional

connections and intimacy forged during communication. Within the context of using VR, virtual interactions would be akin to sharing a physical space with others.

Research suggests that individuals tend to perceive a stronger sense of social presence when they can identify with virtual entities, whether in terms of ethnicity or physical appearance. A study by Qiu and Benbasat (2010) underscores the influence of audience demographics on users' perceptions within VR environments. Through observing a speaker's focus during a presentation, whether directed towards the audience, environment, or oneself, they found significantly impacts anxiety levels. Users may exhibit heightened connectivity and comfort when the virtual audience mirrors their own ethnicity or appearance, fostering a sense of personal connection and potentially mitigating FLA.

Avatars, central to the VR experience, transcend mere representations to become extensions of users themselves. Customizable to varying degrees, avatars contribute to the immersive quality of VR interactions (Waltemate et al., 2018). However, careful consideration must be given to avatar design to avoid triggering the 'uncanny valley' phenomenon first discussed by Masahiro Mori in 1978 (2012), where avatars closely resemble humans but elicit discomfort due to imperfections.

The immersive experience discussed in this study took into account multifaceted elements, including creating inclusive virtual environments that reflect the diversity of learners to foster a sense of belonging. By prioritizing social presence, the VR intervention aimed to cultivate a more supportive and effective learning environment for the volunteer participants in this study. Additionally, by elucidating the interplay between audience composition, social presence, and avatar design within VR environments, this research aimed to deepen our understanding of FLA dynamics and inform the development of effective interventions for language learners.

Study Design

The development of the VR application involved several key steps, starting with the construction of the application using the Unity 3D engine, tailored specifically for compatibility with the Oculus Quest 2 headset. Following this, virtual audiences were created and animated using Ready Player Me and Mixamo, with additional features like hand-tracking enabled to facilitate participant gestures without controllers. To simulate real-world settings, four distinct scenarios were devised within the VR environment, each featuring audiences of varying ethnic compositions and sizes.

These scenarios ranged from one with 15 East Asian students to another with 15 ethnically diverse students (see Figure 1), along with scenarios featuring smaller groups of 5 East Asian students and 5 ethnically diverse students. The behavior of the virtual audience members was controlled through the Unity Engine's animation controller, incorporating a range of affective expressions like nodding, gesturing, and leaning forward into their movements.

Initially, all virtual audience members were programmed to focus intently on the speaker, creating an atmosphere of attentiveness. However, as the presentations progressed, half of the audience was programmed to exhibit typical inattentive behaviors observed in real-life presentations, such as using laptops, conversing, looking away, or stretching. These behaviors were designed to simulate eye contact, with virtual audience members directed to look towards the microphone location where the speaker positioned themselves.

Figure 1: A: Character Selection System; B: A classroom with 15 Diverse ethnicities of students; C: VR Experiment. Credit: Seonjeong Park

Participants were selected from a yearlong pre-sessional English language course, all of whom were preparing to undertake diploma or BA level courses in the arts in Singapore. Recruitment was restricted to individuals aged 18 and older, and informed consent was obtained from all participants. In total, fifteen student volunteers took part in the study, with twelve hailing from mainland China and three from Korea. Their ages varied from 18 to mid-20s, and their English proficiency ranged from A2 (basic user) to B1 (independent user) according to the Common European Framework of Reference for Languages (CEFR) (Cambridge University Press and Assessment, 2024).

Participants engaged in a series of four VR presentations, each lasting two minutes, conducted over two separate sessions. The participants were randomly given one of four topics to talk about and had 10 minutes to prepare what they wanted to say. Data collection methodologies, included head orientation data, pre- and post-questionnaires, and discussion forums, aimed at providing insights into participants' experiences and perspectives. The presentations were also captured using the headsets to enable assessment according to a rubric encompassing criterion such as speech clarity, fluency, tone, volume, pace, use of pauses, and structure.

Pre-questionnaires were administered to gather demographic information and elicit participants' prior experiences with oral presentations in real-world settings, with a focus on encouraging responses in their first language for detailed descriptions.

Furthermore, the VR experience was designed to replicate a classroom environment, allowing participants to select avatars (see Figure 2) and select from four predefined presentation topics designed to be familiar. These topics included self-introduction, food, hobbies and interests, and a special place. Audience composition within the virtual environment varied across scenarios, providing exposure to both homogeneous Asian groups and more diverse audiences. Notably, the behavior of the virtual audience, initially engaged in conversation before transitioning to attentive listening once the speaker started, contributed to the immersive nature of the experience. Each presentation concluded with simulated applause from the virtual audience, mirroring real-world feedback and enhancing the authenticity of the learning environment.

Figure 2: The selection of avatars designed by Seonjeong Park

Using a 5-point Likert scale, the post-questionnaire included questions about FLA, body ownership, social presence, co-presence, focus of attention, and memory assessment. By evaluating these factors, the study aimed to gauge the impact of repeated VR training sessions on participants' perceptions of the audience and their surroundings. The hypothesis posited that participants' perceptions would show improvement over time. Moreover, it was postulated that the size and composition of the virtual audience would influence participants' experiences, potentially resulting in greater levels of self-focus and heightened FLA levels in front of smaller, ethnically diverse virtual audiences. Additionally, it was anticipated that the appearance of the virtual audience would directly impact participants' sense of social presence. Furthermore, the study anticipated that participants would demonstrate heightened attention to detail, such as appearance, clothing, and behavior, when presented with a smaller virtual audience as opposed to a larger one.

The discussion forums provided an additional opportunity for gathering in-depth insights into participant choices and experiences, while also collecting valuable suggestions for improvements. These forums allowed participants to articulate their thoughts on the VR technology's usability, the relevance of the presentation topics, and their comfort within the virtual environment. Additionally, the forums served as a platform for feedback, helping researchers identify and address common challenges, such as avatar realism and interaction mechanics, thereby enriching the research with nuanced data and involving participants actively in the refinement process of VR educational tools.

Findings

The findings reveal insights into participants' VR engagement and its impact on language learning and public speaking skills. Pre-questionnaire data highlighted prevalent anxiety during real-world presentations, linked to pronunciation, preparedness concerns, and language fluency. Post-questionnaire analysis revealed shifts in focus, anxiety reductions tied to perceived audience traits, and ongoing anxiety management challenges. Participants' reflections and forum engagement provided insights into VR immersion, avatar influence on confidence, and virtual audience dynamics' alignment with real-world interactions. Evaluation of the performance of students across the 4 occasions they presented in the VR scenario was varied with some appearing to make little change in their performance, some even deteriorating in their performance, whilst a few appeared to improve in their skills.

Pre-questionnaire Data

Participants responded to pre-questionnaires exploring their prior experiences with delivering oral presentations in front of live audiences. Analysis of the responses unveiled a prevalent

pattern of anxiety and nervousness among participants during real-world presentations. The majority expressed apprehension, with one participant admitting, “I felt extremely anxious before the presentation, causing me to stumble over my words.” Another participant wrote, “I lacked confidence, and it was evident in my shaky voice and body language.” These sentiments echoed throughout, indicating a shared struggle with anxiety-induced speech impediments during public speaking engagements.

Participants attributed their unease to perceived lack of preparedness, with many acknowledging, “I could have definitely prepared better. I didn't rehearse enough, and it made me more anxious.” This underscored the crucial role of thorough preparation in mitigating anxiety and boosting confidence in public speaking scenarios. Notably, participants also expressed concerns regarding fluency and pronunciation, with one remarking, “I struggled with some words during the presentation,” highlighting the ongoing challenge faced by language learners.

Head Orientation Data

While head orientation data were gathered, they did not reveal a notable correlation between audience size in VR presentations and participants’ focus. Previous research indicates that smaller audience sizes may heighten the speaker's stress level (Mostajeran et al., 2020) which would imply that the speakers’ gaze would more likely look away from a smaller audience and more likely to look towards a larger audience. However, it is worth noting that head orientation does not always align with gaze data, indicating that the eyes may look in a different direction than the head is oriented (Ma & Pan, 2022). Gaze data would be useful to gather in future studies.

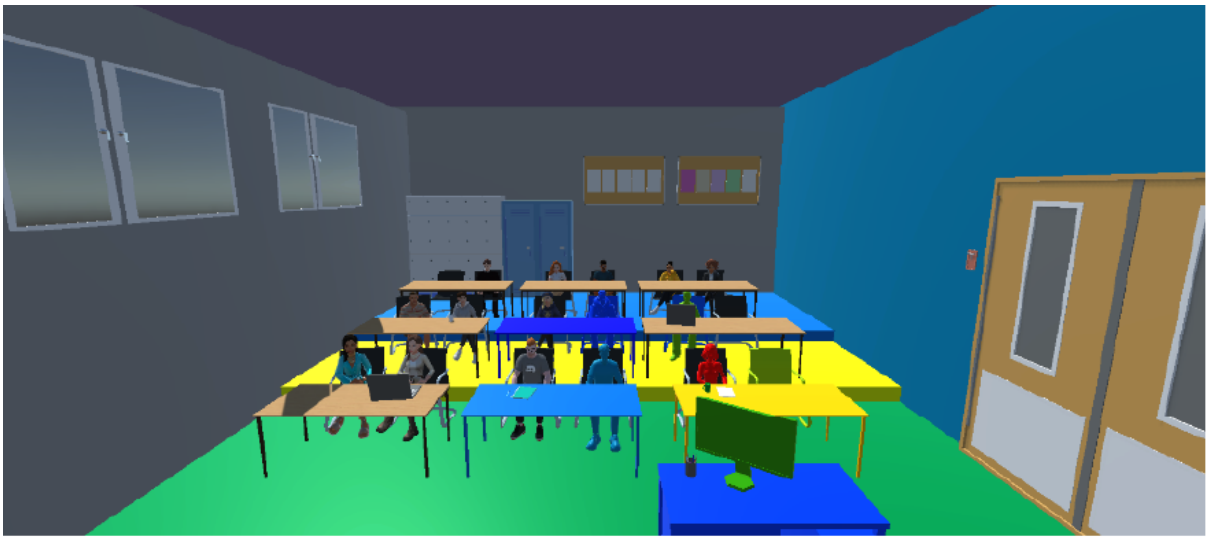

Figure 3: The visualization of head orientation data demonstrated within the condition featuring a diverse virtual audience of 15 individuals. Darker shades of blue indicate fewer instances of head orientation towards a specific point, followed by green, yellow, and red representing the highest frequencies of head orientation towards that point. Created by Seonjeong Park

Evaluation of Performance

The assessment of recorded VR presentations highlighted the variability in student performance across multiple sessions. A comparison between the initial and final sessions

revealed that out of the 15 participating students, six showed minimal changes in their performance, six seemed to regress, and a group of three demonstrated noticeable improvements in their presentation abilities. Interestingly, the subject matter of their presentations did not appear to influence these performance trajectories.

Within the different categories used to assess the VR presentations, it was evident that certain students successfully refined their tone and engagement as they progressed through the VR sessions, with some displaying a marked upward trend, while others oscillated or maintained a steady approach. Another noticeable area of concern was the volume and pace of delivery, as data suggested that consistent modulation of volume and pace remained elusive for several participants. Some managed to master these elements with progression, while others struggled to do so effectively. Additionally, the presentations revealed a dichotomy in content organization, with some students demonstrating a refined ability to streamline their content and deliver more coherent speeches, while others faced challenges in establishing a clear structure throughout their discourse.

This diversity in performance may be attributed to several factors, including students' perception of VR presentations as low stakes, potentially resulting in less diligent preparation for each session. Moreover, as students became more accustomed to the VR experience, they may have experienced a decrease in their sense of investment in their performance, affecting their engagement and motivation. It is evident that further analysis with a larger sample size and presentations spread over an extended period would be valuable in drawing more definitive conclusions regarding students' performance trajectories in VR-based public speaking scenarios.

Post-questionnaire Data

Following each virtual presentation, participants were tasked with completing a post-questionnaire, which comprised primarily of items on a 5-point Likert scale, supplemented by opportunities for freeform responses.

Analysis of the post-questionnaire data provided insights into participants' experiences with VR presentations. Participants had the opportunity to choose avatars for their presentations, ranging from teddy bear outfits to avatars resembling individuals of diverse ethnic backgrounds and professional demeanors. Descriptions of virtual classrooms varied, encompassing small groups of students to larger lecture hall settings. Interestingly, many participants could not distinctly recall the attire of the virtual students, although some mentioned casual clothing or uniforms. Behavioral observations indicated that these virtual students were predominantly attentive and positive, with actions like clapping and nodding noted by the participants. The ability to determine the ethnicity of the virtual students was divisive among respondents, with the majority unable to identify or indicating that English was the dominant language used.

When participants summarized their presentation experiences, distinct patterns emerged. A significant number of participants reported feeling less nervous in the VR environment compared to real-world scenarios. A participant noted, "I felt way less nervous in VR than in real life. It's like a safe space to practice." As they continued to use VR for presentations, some noted decreasing anxiety levels and growing comfort. To emphasize improvement over time, one participant commented, "As I kept presenting in VR, I noticed my anxiety decreasing, and I became more comfortable."

Audience reactions, mirroring real-world settings, had diverse effects on the participants. Concerning the impact of audience reactions, a participant mentioned, "Positive reactions from the virtual audience boosted my confidence, but sometimes their actions were distracting." Feedback on the virtual environment's realism varied. One participant stated, "I appreciated the realism of VR, but some aspects felt unnatural and took away from the experience." Others expressed feelings that certain elements hampered their immersion.

Over time, as the participants continued their VR presentations, there was a discernible improvement in some. For instance, one participant noted, "In my second presentation, I felt more in control and focused on what I was saying, which was a big improvement from the first one." Others described heightened focus in their subsequent presentation, hinting at an ability to learn from prior experiences. Notably, one participant even expressed a desire to engage more dynamically with peers in forthcoming presentations, when they wrote, "I plan to engage more with the audience next time. I realized I need to connect with them better", reflecting a proactive approach to improvement. Furthermore, one participant added reflections about incorporation of hand gestures highlighted a conscious effort to enhance non-verbal communication skills when they said, "I incorporated hand gestures to make my presentation more engaging."

Participants also shared personal development insights, with many identifying areas for improvement in future endeavors. For example, a participant wrote, "Next time, I need to work on organizing my language better and expanding my vocabulary." However, it is important to note that even within the VR setting, a subset of participants still grappled with speech-related anxiety.

However, despite progress and proactive efforts, some participants continued to grapple with feelings of anxiety, highlighting the persistent nature of FLA even within a virtual setting. This observation underscores the complexity of FLA and the ongoing challenges faced by language learners in managing anxiety-related barriers to effective communication.

Discussion Forums

Participants engaged in discussion forums following the VR presentations, providing additional insights into their experiences with the VR environment. Overall, participants expressed optimism about the impact of VR on their oral communication skills. They praised its usefulness for rehearsal, confidence building, and improving the quality of content delivery.

The analysis of discussion forums revealed various themes related to the use of VR for improving presentation skills. Participants often described their VR experiences as novel and immersive, likening them to real-world scenarios. For example, one participant noted, "It was like a real world when I was speaking. The students in the class is very like my classmates, like I think they were very polite when I was speaking."

Student participants appreciated the ability to choose avatars that resonated with their preferences and goals. Research indicates that individuals with greater confidence tend to opt for avatars resembling their own physical features, indicating a preference for self-representation and confidence projection (Waltemate et al., 2018). This tendency was observed where some participants selected avatars based on thematic relevance, while others experimented with different looks and even genders, illustrating the versatility of the VR

platform, when one participant explained, “The first time I used the bear because I think I'm not very confident for my English. But the second, the third time, I used the shape more like me and I have a new fun because the one topic is talk about the special place and I just went to Hong Kong. I choose the shape more suitable like when I was in Hong Kong.”

Discussion also revolved around the behavior of the virtual audience, with some participants finding it reassuring and confidence-boosting, while others focused primarily on their performance, minimizing the influence of virtual spectators. One participant described how, “First time if they have some behavior I think they are not very interested in my presentation. But their behavior will influence me in my first time. It made me nervous, but now it's okay. I just tell myself, I know they are not real. So I am relaxed.”

The VR platform's potential was a point of debate, with some participants viewing it as equal, if not superior, to traditional presentations due to its ability to enhance content focus and reduce anxiety. However, others pointed out discrepancies, such as the lack of immediate feedback or perceived artificiality in the virtual environment. For example, one participant said, “If you make some mistakes in the VR is okay. But in the real presentation, maybe in the question times they will ask you questions. You need to prepare that question time but in VR, you just say. Nobody will ask you.” Therefore, suggestions for improvement included the introduction of unpredictable audience behaviors, the option to refer to presentation notes, and real-time feedback during VR sessions.

The Importance of Honing Presentation Skills

The importance of this research lies in its relevance to the evolving landscape of educational assessment, particularly in light of the growing prevalence of generative artificial intelligence (GenAI). As educational assessment methodologies evolve, there is likely to be a noticeable shift towards evaluating students based on their research methodologies and decision-making processes, rather than solely focusing on final outputs. This paradigmatic shift underscores the increasing significance of verbal communication skills, with presentations emerging as an increasingly important component of the assessment process in the AI era (Whitham et al., 2023).

In an educational landscape shaped by technological advancements, students are expected to demonstrate proficiency not only in content knowledge but also in the articulation and presentation of their ideas. GenAI technologies are poised to play a disruptive role in educational assessment, emphasizing the importance of effective verbal communication as a key competency for success in diverse academic and professional settings.

Conclusion

This study underscores the potential impact of VR presentations on mitigating FLA and enhancing presentation skills among language learners, contributing to our understanding of how emerging technologies can bolster verbal communication proficiency. As educators and researchers grapple with the complexities of assessment practices, the insights gleaned from this research offer possible implications for integrating VR-based interventions into language learning and assessment contexts. Moreover, in an educational landscape increasingly influenced by GenAI, there is a growing emphasis on evaluating students’ research methodologies and decision-making processes alongside their final outcomes. This underscores the significance of verbal communication skills, such as presentations, in the

assessment process, suggesting that mastering the verbal articulation of knowledge may become increasingly crucial for language learners to effectively navigate FLA.

However, it is important to acknowledge several limitations in the research project. Firstly, the small sample size may limit the generalizability of the findings. The participants, primarily from East Asia, may not fully represent the diverse population of language learners, potentially impacting the validity of our conclusions. Additionally, participants' failure to notice the ethnicity of virtual groups raises questions about the realism of avatar designs or participants' attention to detail. This warrants further investigation to better understand the impact of virtual audience ethnicity on FLA. Lastly, practical challenges associated with headset use, such as cost constraints, limited wear duration, and logistical complexities, may hinder the widespread adoption of VR technology in language learning contexts.

Despite these limitations, our findings highlight the complex interplay of factors shaping participants' experiences within the VR environment. While VR offers a unique space for practicing speaking skills and potentially mitigating FLA, not all participants may derive equal benefit from the experience. Some individuals may continue to grapple with anxiety and lack confidence in their speaking abilities, suggesting the need for further exploration of comprehensive intervention strategies. Moreover, this area prompts further investigation to ascertain whether outcomes are influenced by individual personality traits or language proficiency levels, thereby informing tailored interventions for diverse learner profiles.

To address these limitations and deepen our understanding of VR's potential in FLA reduction, we plan to extend the research study. This extension will involve collecting more qualitative data. Additionally, we plan to employ more advanced techniques such as eye gaze tracking to explore what participants' look at whilst presenting and investigate the impact of audience size and ethnicity on FLA in greater detail. By conducting randomized testing of audience characteristics and correlating these factors with personality traits, we aim to glean deeper insights into the complex dynamics at play in VR-mediated language learning environments.

In essence, while our initial findings offer promising implications for VR technology in language education and FLA intervention strategies, further research is necessary to refine interventions and unlock the potential of VR in addressing FLA and enhancing presentation skills among language learners. Through ongoing investigation and iterative refinement, VR holds promise as a potentially valuable tool in language education, offering innovative solutions to contemporary challenges in FLA management and pedagogical practice.

This approach not only advances our understanding of FLA and presentation skills development but also contributes to the broader discourse on technology-mediated language learning and pedagogical innovation. By highlighting the multifaceted interplay between VR technology, learner experiences, and educational outcomes, this research adds to the growing knowledge base for future advancements in language education and FLA intervention strategies, ultimately empowering language learners to navigate diverse linguistic contexts more effectively.

Acknowledgements

This work was supported by the GOLDSMITHS-LASALLE PARTNERSHIP INNOVATION FUND (PIF), an initiative led by Goldsmiths University of London designed to support the growth and development of Goldsmith's academic partnership with LASALLE College of the Arts, Singapore.

References

Alsaffar, M. J. (2021). Virtual reality software as preparation tools for oral presentations: Perceptions from the classroom. Theory and Practice in Language Studies, 11(10), 1146–1160. https://doi.org/10.17507/tpls.1110.02

Cambridge University Press and Assessment. (2024). International language standards | Cambridge English. https://www.cambridgeenglish.org/exams-and-tests/cefr/

Chollet, M., Wörtwein, T., Morency, L. P., Shapiro, A., & Scherer, S. (2015). Exploring feedback strategies to improve public speaking: An interactive virtual audience framework. UbiComp 2015 - Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing, 1143–1154. https://doi.org/10.1145/2750858.2806060

Genesee, F. (1994). Integrating language and content: Lessons from immersion.

Kianinezhad, N. (2024). Foreign Language Anxiety in Education. JELITA: Journal of English Language Teaching and Literature, 5(1), 123–143.

Krashen, S. D. (1982). Principles and practice in second language acquisition. Pergamon Press Inc.

Ma, F., & Pan, X. (2022). Visual Fidelity Effects on Expressive Self-avatar in Virtual Reality: First Impressions Matter. 12–16. https://research.gold.ac.uk/id/eprint/31676/

MacIntyre, P. D., & Gardner, R. C. (1994). The Subtle Effects of Language Anxiety on Cognitive Processing in the Second Language. Language Learning, 44(2), 283–305. https://doi.org/10.1111/J.1467-1770.1994.TB01103.X

MacIntyre, P., & Gregersen, T. (2012). Affect: The Role of Language Anxiety and Other Emotions in Language Learning. In Psychology for Language Learning: Insights from Research, Theory and Practice (pp. 103–118). Palgrave Macmillan, London. https://doi.org/10.1057/9781137032829_8

Mori, M., Macdorman, K. F., & Kageki, N. (2012). The Uncanny Valley: The Original Essay by Masahiro Mori Translated. https://spectrum.ieee.org/automaton/robotics/humanoids/the-uncanny-valley

Mostajeran, F., Balci, M. B., Steinicke, F., Kuhn, S., & Gallinat, J. (2020). The Effects of Virtual Audience Size on Social Anxiety during Public Speaking. 303–312. https://doi.org/10.1109/VR46266.2020.00050

Qiu, L., & Benbasat, I. (2010). A study of demographic embodiments of product recommendation agents in electronic commerce. International Journal of Human-Computer Studies, 68(10), 669–688. https://doi.org/10.1016/J.IJHCS.2010.05.005

Short, J., Williams, E., & Christie, B. (1976). The social psychology of telecommunications. In The social psychology of telecommunications. Wiley. https://books.google.com/books/about/The_Social_Psychology_of_Telecommunicati.html?id=Ze63AAAAIAAJ

Waltemate, T., Gall, D., Roth, D., Botsch, M., & Latoschik, M. E. (2018). The impact of avatar personalization and immersion on virtual body ownership, presence, and emotional response. IEEE Transactions on Visualization and Computer Graphics, 24(4), 1643–1652. https://doi.org/10.1109/TVCG.2018.2794629

Whitham, R., Stockton, G., Richards, D., Lindley, J., Jacobs, N., & Coulton, P. (2023). Implications of Generative AI on Learning and Assessment in Higher Education and Design Research Practice.

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